T-62 MAIN BATTLE TANK 1965–2005

STEVEN J ZALOGA

ILLUSTRATED BY TONY BRYAN

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EDITOR'S NOTE

For ease of comparison between types, imperial measurements are used almost exclusively throughout this book. The following data will help in converting the imperial measurements to metric:

1 mile = 1.6km

1lb = 0.45kg

1 yard = 0.9m

1ft = 0.3m

1in. = 2.54cm/25.4mm

1 gal = 4.5 liters

1 ton (US) = 0.9 tonnes

CONTENTS

INTRODUCTION 4

THE FIREPOWER CONUNDRUM 4

THE KRUSHCHEV INITIATIVES 8

THE STOP-GAP TANK 12

ON THE PATH TO T-72 17

SWAN-SONG OF THE MISSILE TANK 18

T-62 EVOLUTION 20

EXPORT BONANZA 30

INTO COMBAT 31

- The Golan Maelstrom
- Third World Warrior
- The Afghan Quagmire
- Desert Storm

FURTHER READING 47

INDEX 48

T-62 MAIN BATTLE TANK 1965–2005

INTRODUCTION

The Cold War myth about Soviet tank development was that it was a rigorously rational process based on a careful assessment of tactical doctrine, force structure, and technology. It has since become apparent that it was as fraught with bureaucratic in-fighting, petty jealousies, and industrial squabbling as any program in NATO. The T-62 tank was a classic case of the political dimensions of Soviet tank development. The program stemmed from a combination of political interference from the Kremlin and the ambitions of a rising tank plant in the industrial hinterlands trying to establish itself as a legitimate player in the eyes of the Kremlin. Despite repeated attempts by the Moscow tank bureaucracy to squash the program, the T-62 became the vanguard of the Soviet tank force in the late 1960s and early 1970s. Although not revolutionary in terms of armor or mobility, it pioneered the use of smooth-bore tank guns and potent new types of ammunition. It coincided with a major shift in Kremlin weapons export policy, and so the T-62 was exported in considerable numbers. This extensive export had consequences for the T-62's reputation since it played a central role in the 1973 Middle East war and the resulting controversies over the future of the tank on the modern battlefield. Even though it was superseded in Soviet service by the T-64A and T-72 in the mid-1970s, it remained in the Soviet Army in large numbers and was the backbone of Soviet tank units in the Afghanistan war. It is best known for its extensive combat use outside the Soviet Union, notably the Iran–Iraq war of 1980–88, the Gulf War of 1991, and dozens of smaller conflicts in the Middle East and Africa. The T-62 remains in service in significant numbers around the world. While it may be obsolete compared to state-of-the-art main battle tanks, its robust design and adequate firepower make it a formidable weapon in many regions of the world and it is likely to remain in service for many years to come.

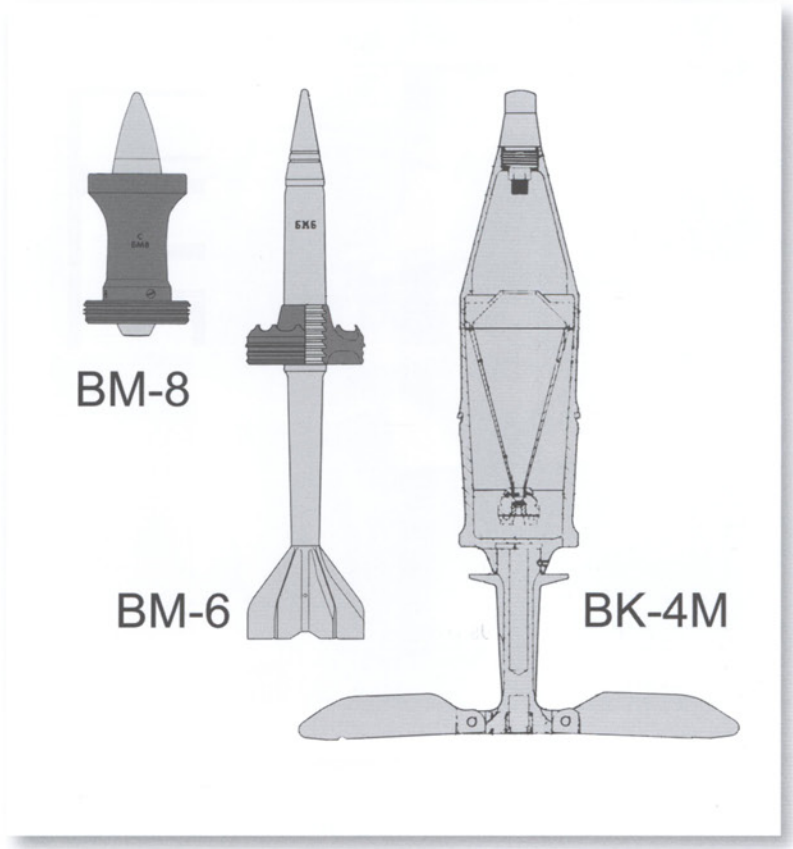
THE FIREPOWER CONUNDRUM

By the late 1950s, the Soviet Army was facing a serious dilemma regarding future tank armament. Its medium tanks were armed with the D-10 100mm rifled tank gun, and its tank destroyer units were also equipped with towed and self-propelled 100mm guns. However, the effectiveness of these weapons was growing increasingly questionable owing to the thicker armor of NATO tanks. The D-10 tank gun could not reliably penetrate the frontal armor of

The T-62 had its moment of glory as the spearhead of the Egyptian and Syrian forces in the October 1973 Middle East war. Syrian tank losses were substantial and many tanks captured by Israel were later transferred to NATO countries for technical evaluation like this T-62 Model 1972 in French hands. (Author)

such tanks as the US Army's M48A2 and it was even less adequate when facing newer NATO types such as the US Army's M60 or the British Chieftain.

At the time, the two principal Soviet anti-tank projectiles were the kinetic energy APC (armor piercing capped) and the shaped-explosive HEAT (high explosive anti-tank). The APC was a familiar bullet-shaped projectile, and it was fitted with a thin ballistic cap covering the blunt penetrator because a blunt penetrator provided better penetration than a sleek un-capped penetrator. By the mid-1950s, the APC round was obsolete because it was too heavy and therefore incapable of being accelerated to sufficient speeds to deal with the increasing amounts of tank frontal armor. A smaller, lighter, and faster projectile was needed. One type of high-velocity penetrator already in use was the APDS (armor piercing discarding sabot) which had first been widely used on the British 17pdr Firefly in late 1944. This projectile used a sub-caliber, hard-metal penetrator typically made from tungsten carbide that was encased in a light-metal sabot. When fired, the sabot petals peeled away from the core projectile. This allowed large-caliber tank guns to fire a small, very high-velocity projectile. The early APDS rounds had excellent penetration but poor accuracy, as slight perturbations in the peeling of the sabot petals could adversely affect accuracy. As a result, Soviet tanks in the late 1950s lacked a 100mm APDS projectile. This problem was gradually overcome by the 1960s. There were several other methods to increase the speed, and therefore the penetration power, of kinetic-energy projectiles. A traditional method was to increase the length of the gun tube, since this allowed the propellant to act on the projectile for a longer period of time and thereby increase its initial muzzle velocity. Guns could also be designed using improved metallurgical techniques that would permit higher chamber pressures. These higher chamber pressures could be attained both by increasing the volume of propellant as well as using a more energetic propellant.



This drawing summarizes the three approaches in Soviet anti-armor projectiles in the early 1960s. To the left is the 100mm BM-8 APDS, which consisted of a sub-caliber tungsten penetrator inside a sabot. The darker section is the sabot. In the center is the 115mm BM-6 APFSDS which consisted of a steel long-rod penetrator inside a sabot. At the right is the 115mm BK-4M HEAT shown in cross section to expose its shaped-charge warhead; its fins are shown here deployed as they would appear after firing.

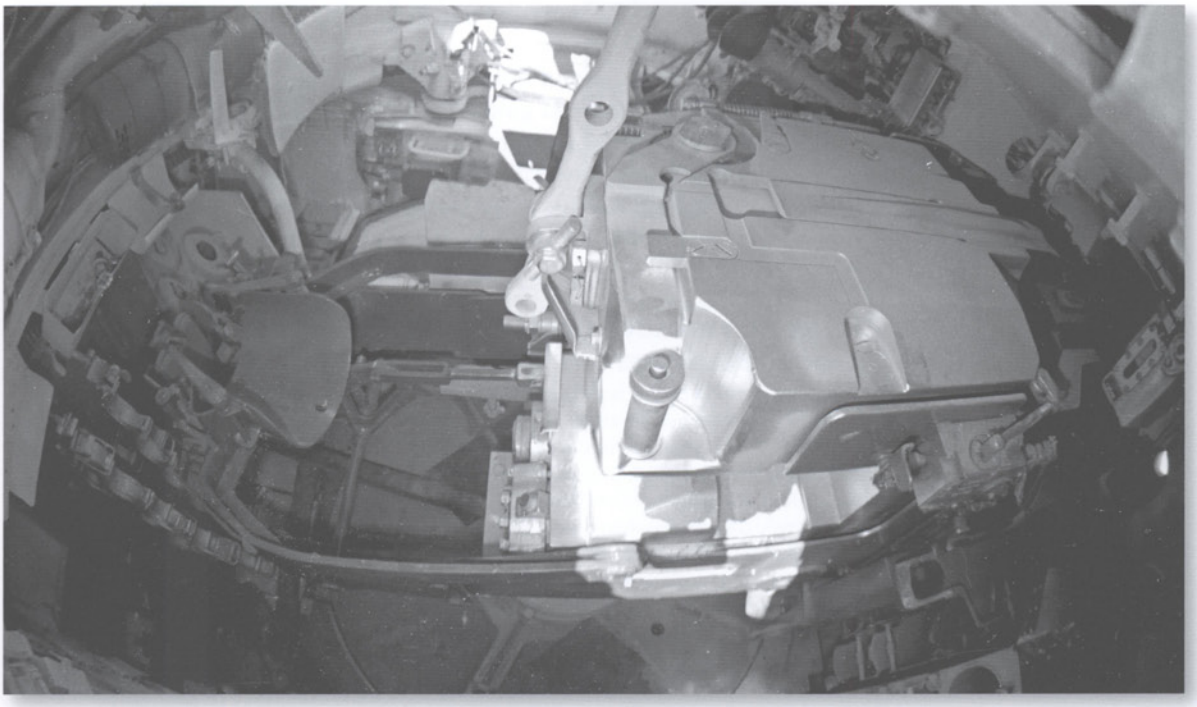
The premier Soviet tank gun design bureau, General F. F. Petrov's OKB-9 at the Uralmash plant in Perm, was designing the next generation 100mm gun, the D-54, that employed all these techniques. The old D-10 had a length of L/56 while the new D-54 had a length of L/62; the D-10 APC round had an initial muzzle velocity of 900m/s while the D-54 with its new APDS projectile offered 1,015m/s. Most importantly, the D-54 had a reasonable chance of penetrating typical NATO frontal armor of the period at typical combat ranges while the D-10 did not.

The alternative to kinetic-energy ammunition was the HEAT projectile. This used a high-explosive warhead shaped around a metal cone. On impact, the shaped explosive crushed the metal cone into a hypersonic stream of metal particles which had prodigious penetrating power against armored plate. Shaped-charge anti-tank warheads had been widely used on infantry anti-tank rockets such as the German Panzerfaust and US bazooka in World War II. They were slow in coming to rifled tank guns for two reasons. To begin with, mechanical impact fuses of the type available in World War II were too slow to detonate the shaped-charge warhead in time; the cone was crushed during impact and before the fuse could detonate the high-explosive charge. So HEAT warheads could be used in slow, low-velocity cannons such as howitzers, but not in high-velocity tank guns. This problem was overcome after the war with the advent of piezo-electric impact fuses. The second problem was that rifled tank guns, unlike infantry rockets, imparted a spin to the HEAT projectile that degraded the penetrating power of the hypersonic particle stream by as much as half. Even though early HEAT warheads were not well suited to tank guns in the mid-1950s, they were extremely useful in other applications such as the emerging technology of anti-tank missiles. The missiles did not spin, and could use larger-diameter warheads than typical tank guns, giving them excellent penetration against contemporary tank armor. As a result, both the Soviet and NATO armies examined the use of missiles either as a replacement for tank guns or as a supplement for tank guns during this period.

Besides the missile alternative, several technological solutions were being examined to adapt HEAT warheads for tank guns. The new French 105mm smooth-bore tank gun adopted on the AMX-30 introduced a slip ring into the projectile design to minimize the spinning. Another approach was the use of pop-out fins at the rear of the projectile, which was the path chosen by the Soviet and US armies by the early 1960s.

By the mid-1950s, the Soviet Army had two medium-tank programs under way, the evolutionary T-55 design being undertaken by V. N. Kartsev's design bureau at the Uralvagon plant in Nizhni-Tagil, and the next-generation *Obiekt 430* tank being developed by A. A. Morozov's KB-60 bureau in Kharkov. Both design bureaus shared a common ancestry: Morozov's bureau had relocated from Kharkov to Nizhni-Tagil in 1941 because of the German invasion, and returned to Kharkov after the war. It left an engineering team in Nizhni-Tagil that became a separate design bureau in its own right. Morozov's bureau was regarded by the tank bureaucracy in Moscow as the inheritors of the Soviet medium-tank tradition with the lineage of the T-34, T-44, and T-54. The less established Nizhni-Tagil team was the young upstart, given less demanding tasks such as the evolution of the T-54A into the modestly improved T-55. Even if Nizhni-Tagil had fewer resources than Kharkov, it had nearly as much ambition, not only because of the Kartsev design bureau but also the associated Uralvagon plant which had been the Soviet Union's largest tank manufacturer during World War II and a major railroad manufacturer as well. The plant director, Ivan V. Okunev, used his connections in Moscow to try to add resources to the plant's tank programs. Rivalry between Kharkov and Nizhni-Tagil gained momentum through the 1950s and reached a head in the 1960s and 1970s over the issue of the next-generation tank.

Even though the Kharkov bureau was assigned the task of developing the next-generation tank, Kartsev's bureau at Uralvagon was authorized to develop the *Obiekt 140* design to examine new directions in tank development. This project was largely inspired by new NATO tanks such as the US Army's M48 Patton, which used an elegant cast hull. The *Obiekt 140* also served as Nizhni-Tagil's test-bed for the next-generation D-54 smooth-bore 100mm gun. While the *Obiekt 140* offered better hull design and better firepower than the T-54A, it had a troublesome powertrain and the program was quietly terminated.



The new U-5TS 115mm smooth-bore gun adopted on the T-62 appears fairly conventional from this photo of the breech block. Among its innovations was an automated shell-casing ejector, which can be seen to the left in this view inside a T-62. (Author)

THE KHRUSHCHEV INITIATIVES

Alongside the *Obiekt 140*, the Uralvagon bureau was also starting to examine missile-armed tanks. The Soviet premier, Nikita Khrushchev, was an ardent advocate of missiles, arguing that they would render conventional weapons obsolete. Khrushchev saw missiles as a revolution in warfare, much as the "jeune école" had seen torpedo boats and submarines at the turn of the century. Khrushchev believed that small missile-armed vessels would doom the large cruisers and battleships favored by Soviet admirals, and that missile-armed tanks would doom the heavy gun-armed tanks favored by the Soviet Army. Khrushchev prodded the head of the tank industry to push in the direction of missile-armed tanks, and in the late 1950s he ordered the heavy-tank programs to be cancelled in favor of missile-armed tanks, even though the technology had not yet matured. The missile-tank program began in earnest in 1956, with very little enthusiasm from the tank-design bureaus who regarded the idea as half-baked and the technology as far too raw and untested. Nevertheless, the designers knew better than to argue with the Kremlin and full-scale programs were started at all the main tank centers including Uralvagon.

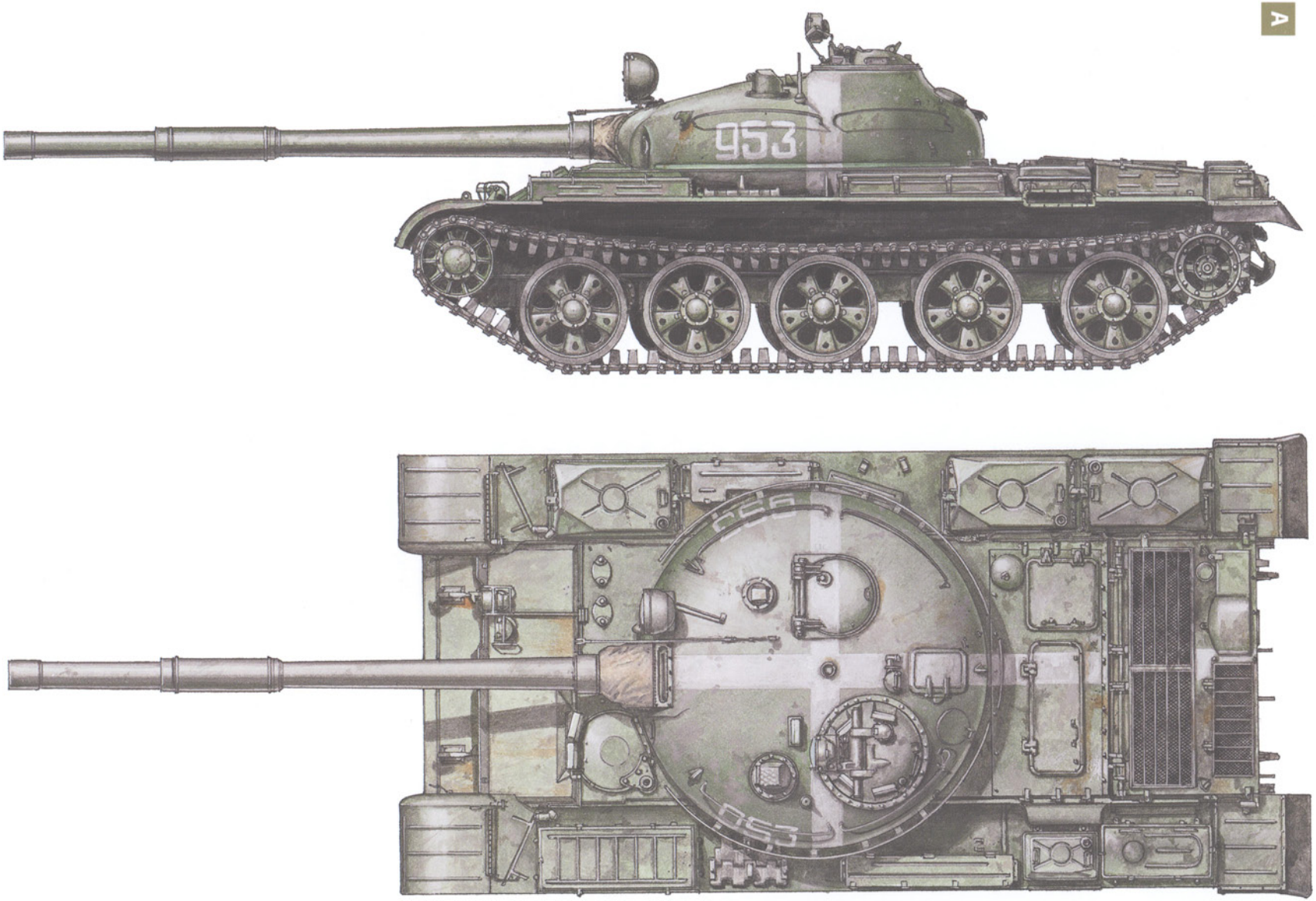
The Uralvagon missile tank was designated as *Obiekt 150* and consisted of a chassis evolved from that of the new T-55 tank, armed with the new 2K4 Drakon (Dragon) missile system. The *Obiekt 150* hull design required a lengthened chassis compared to the T-55 because of the larger volume required for missile stowage. A preliminary Uralvagon design for the *Obiekt 150* was approved at the end of 1957. The missile system was assigned to A. A. Raspletin's KB-1 GKRE (Design Bureau 1 of the State Radio-Electronics Industry) and to the TsKB-14 in Izhevsk for the missile propulsion. At this point, KB-1 was fairly obscure, but would go on to become Almaz, the premier Soviet air-defense missile-development organization responsible for the legendary S-75 (SA-2 Guideline) and today's S-300P (SA-10 Grumble).

The Drakon missile represented one of the most sophisticated missile designs of its day, using a semi-automatic command-to-line-sight guidance system via a radio-command link. This was a considerable challenge due to the need to package a robust guidance system in a relatively small missile in an age before integrated circuits. On the positive side, the large-diameter shaped-charge warhead was capable of penetrating 500mm of armor, about double that of typical tank guns using kinetic-energy penetrators. Initial launch tests of the 3M7 Drakon missile started late in 1958 but the missile

A

T-62 MODEL 1962, SOVIET 20TH GUARDS ARMY, OPERATION *DANUBE*, PRAGUE, AUGUST 1968

Prior to the invasion of Czechoslovakia in August 1968, Warsaw Pact tank units received instructions to paint a white cross over the roofs of their vehicles as an air identification marking to avoid confusion with Czechoslovak tanks. This was a standard Soviet air identification marking, widely used since the 1930s and indeed the same one adopted for the assault on Berlin in April 1945. This tank is typical of Cold War patterns in overall camouflage green (*zashchitniiy zeleno*), an extremely dark green when new; a US match is FS 34098. Tactical markings usually included a three-digit tactical number variously called the *boevoy nomer* (combat number) or *bortovoy takticheskiy nomer* (side tactical number). The Soviet Army intentionally avoided a standardized system and encouraged variation between divisions for counter-intelligence reasons. Generally, the three numbers indicated battalion, company, and individual tank, but a common alternative was to use the first number to indicate the company within a regiment, and the next two numbers sequentially as the tanks within the company.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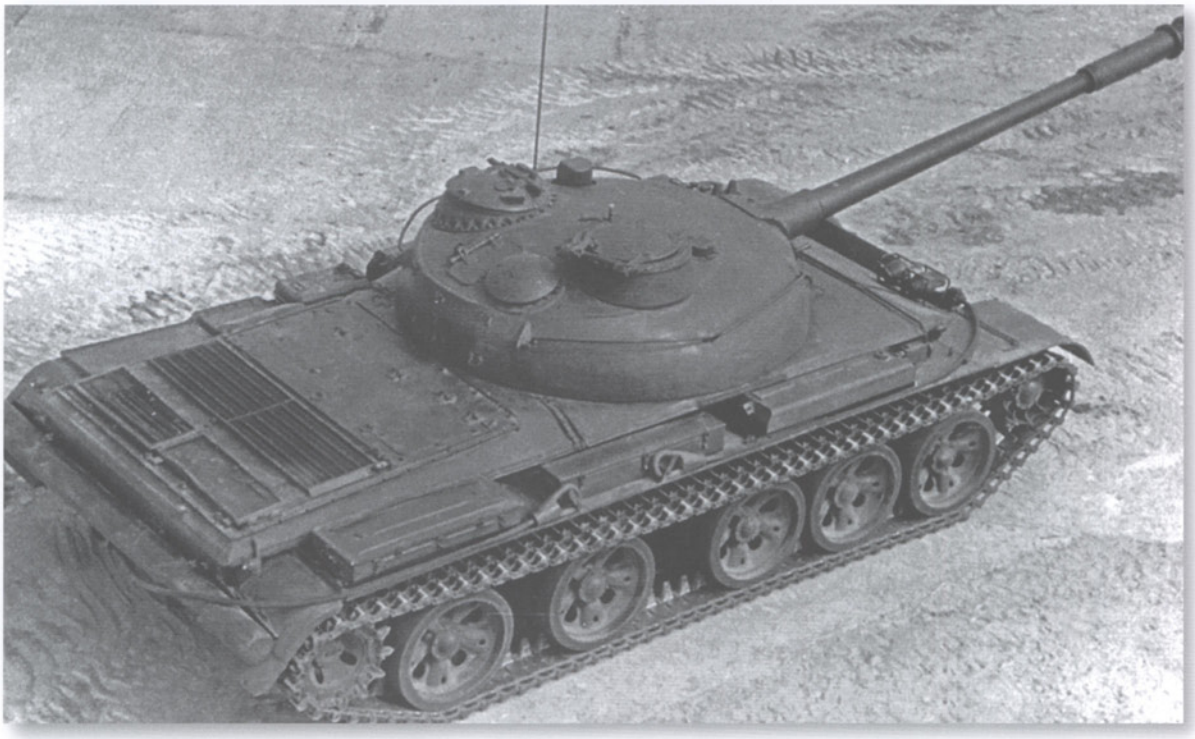


The Soviet tank bureaucracy in Moscow was expecting to base future medium tanks on the new 100mm D-54 gun and this was the armament of Uralvagon's pilot *Obiekt 165*, as shown. Even after the new U-5T Molot was selected for the T-62, the D-54 was used on the short-lived T-62A.

and the associated 2K4 system required considerable work. Besides the missile electronics, the hybrid radio/optical fire-control system proved to be a daunting technological hurdle.

In contrast to the cutting-edge technology of the missile system, the *Obiekt 150* tank was a fairly straightforward design, having a hemispherical turret with a small port in the roof to allow the missile launcher to be elevated from inside the hull into the launch position, and then to retract for re-loading. The Obiekt 150 could carry 15 missiles, of which 12 were in an autoloader. This was far below the usual Soviet Army requirement for a minimum of 35–40 rounds of ammunition for conventional tanks, but it was accepted since the probability of kill of these rounds was expected to be much higher.

Live-fire testing of the *Obiekt 150* with the new Drakon missile and associated fire-control system first took place at the Kubinka proving ground in May–June 1963, and a production standard vehicle was displayed to Khrushchev on September 14, 1964, shortly before his downfall. On witnessing the *Obiekt 150* in action, Khrushchev exclaimed "the tank has no future against this!" Although the system worked well enough, Khrushchev was overthrown in October 1964 over strategic issues brought to a head during the 1962 Cuban missile crisis as well as his impulsive political style. His "hare-brained schemes" were a particular source of frustration in the Kremlin, and the military was not happy with his interference, his micromanagement, his missile-tank demands, and his cancellation of heavy-tank programs.

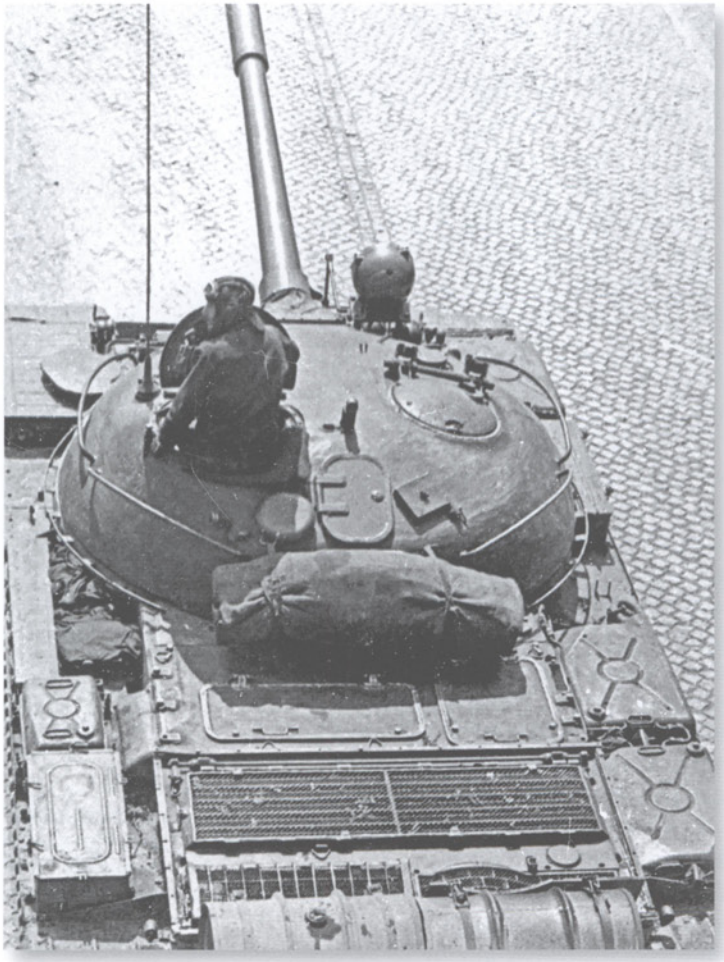
As a result of the turmoil in the Kremlin, serial production of the *Obiekt 150* was put off until 1968, as will be related further below. Part of the delay was simply due to the army's distaste for Khrushchev's meddling in their affairs but also due to the recognition that this technology was not yet mature enough to offer a complete substitute for tank guns. The most important effect of the *Obiekt 150* program on the future T-62 tank was that it fostered the

construction of an elongated hull using T-55 components that would prove to be easily adapted to a new and more powerful gun.

This new gun was the second key factor leading to the T-62 tank, and can also be traced back to another initiative by Nikita Khrushchev. In late 1958, he was shown the new T-12 Rapira (Rapier) 100mm smooth-bore, towed anti-tank gun. This was a considerable novelty at the time compared to conventional rifled guns, and had been designed by a relatively unknown team at the Yurga industrial plant instead of Petrov's bureau in Perm. This smooth-bore gun used two new types of ammunition, APFSDS kinetic-energy projectiles and fin-stabilized HEAT projectiles, and offered markedly better performance than existing 100mm tank and anti-tank guns. On being shown its impressive performance, Khrushchev's enthusiasm bubbled over and he insisted that it immediately be adapted to Soviet tanks, with at least 200 tanks armed with the gun in 1959.

The T-12 Rapira gun used two different approaches to substantially improve its armor-penetrating power. To begin with, the smooth-bore design skirted around the HEAT spinning problem, and the new BK3 projectile had pop-out fins to stabilize the round in flight. On the down side, the HEAT projectile was large, heavy, and blunt, meaning that it was slow and had a substantial ballistic arc in long-range engagements, and so required very precise range determination to be accurate. This was a real problem on Soviet tanks, which lacked the stereoscopic optical-range rangefinders found on NATO tanks because of their complexity and cost. The T-12 took a second approach to armor penetration by using a novel kinetic-energy APFSDS (armor-piercing, fin-stabilized, discarding sabot) projectile. The APFSDS worked much like the earlier APDS, with a sub-caliber projectile encased in a sabot. But the APDS penetrator was small and bullet-shaped while the APFSDS penetrator was long and arrow-like, with fins at the rear for stability. As a result, the APFSDS projectile had more mass than the APDS, and the finned, long-rod penetrator was inherently more stable and less prone to perturbations from sabot peeling than the APDS. Finally, to impart more energy to the APFSDS round, the T-12 used a new generation of 100mm ammunition with 8.75kg of propellant compared to less than 6kg in the contemporary 100mm tank ammunition. As a result, the BM2 penetrator had an initial muzzle velocity of 1,540m/s compared to only 900m/s for the usual 100mm APC round. Correspondingly, penetration was improved from 185mm at 1,000m to about 230mm, which was critically important since it enabled the

The T-62 was part of a broader modernization effort in the Soviet Army in the 1960s, including the revolutionary BMP-1 infantry fighting vehicle seen here in the background. This T-62 Model 1962 is unusual in that it has a couple of the old T-54 spider wheels instead of the usual starfish wheels that were standard on this tank type; since these wheels were interchangeable, these are most likely replacements.



The initial Model 1962 production version of the T-62 tank inherited many features from the parallel T-55, including the same engine deck with two access panels as seen in this overhead view of a T-62 tank of the GSFG in Germany in the 1970s. (US DoD)

weapon to penetrate most NATO tanks of the period.

The T-12 was not warmly received by the Soviet tank development community at the time because the new D-54 rifled tank-gun design was already under way at Petrov's favored gun-design bureau. The D-54 was the weapon chosen for the next-generation Soviet tank, the *Obiekt 430* being developed in Kharkov as mentioned earlier, and it was mounted on Nizhni-Tagil's abortive *Obiekt 140* design as well.

The Kharkov bureau wanted nothing to do with Khrushchev's impulsive order for mounting the T-12 gun in tanks, since the development of the *Obiekt 430* was well under way, and adapting the new gun to the tank would disrupt plans to move it into production. As a result, the Moscow tank bureaucracy threw this political hot potato into Uralvagon's lap. The T-12 had won its impressive armor-penetrating power by increasing the amount of propellant in the ammunition, and so was correspondingly longer than the normal 100mm round, 1,200mm compared to 1,050mm. The head of the bureau, Leonid Kartsev, immediately realized that the long ammunition would be impossible to fit inside the confines of existing Soviet medium-tank turrets. He recommended instead that the 100mm D-54 rifled tank gun be converted into a smooth-bore by boring out the rifling, which enlarged it to 115mm. By increasing the diameter of the propellant case, the round could contain enough propellant while staying within length limits. Not wishing to incur Khrushchev's wrath, but understanding Kartsev's argument, the tank bureaucracy in Moscow agreed and suitable orders were issued to allow Petrov's bureau to develop the new 115mm U-5 Molot (hammer) gun and for the main ammunition development center, NII-24 (Scientific Research Institute-24), to adapt the Rapira ammunition to the new weapon.

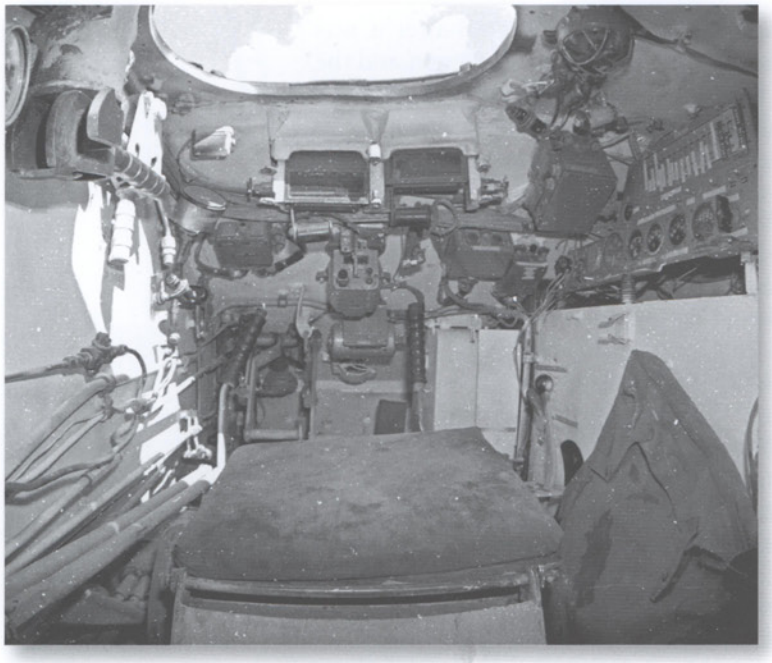
THE STOP-GAP TANK

Uralvagon was already familiar with the new and preferred D-54 100mm gun. They had first attempted to mount it on a version of the T-54A tank, the *Obiekt 139*, which clearly demonstrated that the existing turret ring was not adequate to handle this powerful weapon. They successfully developed an enlarged turret for the D-54 turret on the failed *Obiekt 140*, and had developed a lengthened chassis for the *Obiekt 150* missile tank. So in 1957, Kartsev combined these features into the *Obiekt 165*, an unauthorized

Uralvagon initiative not formally authorized by Moscow until after it was completed in 1958. Owing to the close relationship of the D-54 gun and the new U-5 Molot gun, mounting the 115mm gun on a modified version of the *Obiekt 165* proved to be very straightforward. Formal approval for the Molot-armed tank project came from a Council of Ministers decree on August 31, 1959, which led to the design of the *Obiekt 166*, codenamed *Yubileniy* (Jubilee). Curiously enough, the *Obiekt 166* was not designated as a tank, but rather as a tank destroyer. It was considered a mechanized version of the T-12 Rapira and to be used to supplement existing medium tanks such as the T-55, not replace them. So the government authorized two parallel development programs, the *Obiekt 165* tank armed with the rifled D-54 100mm gun, and the *Obiekt 166* tank destroyer armed with the smooth-bore 115mm Molot gun.

The recoil and size of the new Molot gun necessitated a larger turret ring than on the T-54/T-55, increasing from 1.83m to 2.25m. These changes led to an increase in the overall hull length of 386mm compared to the T-55 and corresponding changes in wheel spacing. Otherwise, efforts were made to keep features between the *Obiekt 166* and T-55 as close as possible for the sake of economy. One of the features of the new gun system was a method to automatically eject the spent shell casing after firing. This was the result of changes in Soviet Army requirements which insisted that new armored-vehicle designs have an integral chemical-biological-radiological (CBR) defensive system. The initial scheme was to use compressed air to purge the gun tube of fumes before the casing extraction to prevent the sealed fighting compartment from becoming fouled by propellant gas. This was rejected owing to the volume of the compressed air cylinders and associated equipment that would reduce the onboard ammunition below acceptable levels, with a minimum of 40 rounds being specified. The automated casing ejector system came at a cost. This system slowed the gun-firing cycle, since the gun had to be depressed after each firing, the casing ejected, and then the original elevation re-established. Another new feature of the *Obiekt 166* was the adoption of a single-piece turret casting developed at the Chelyabinsk foundry in place of the T-55 and original *Obiekt 140/165* configuration

The prolonged development problems with the T-64 tank necessitated large-scale production of the less elaborate T-62 as a stop-gap. Production did not end until 1973, by which time the T-72 took its place at Uralvagon.



The driver's compartment of the T-62 was essentially identical to that of the T-55 and used traditional tractor-style track-braking for steering. (Author)

which had welded plates for the roof; this was adopted later on the *Obiekt 165*.

Firing trials of the new 115mm gun and ammunition took place in September 1959 and integrated tests of the *Obiekt 166* with the Molot gun followed from April to September 1960. The tests were generally favorable, with the usual number of small modifications and improvements identified. Even though it represented a significant advance over the existing T-55 tank, the GBTU (Main Armored Vehicle Directorate) refused to approve the *Obiekt 166* for production. The tank bureaucracy in Moscow still wanted to shift all tank production from the T-55 to the preferred *Obiekt 430* with the new D-54, not the "Khrushchev's bastard", the 115mm gun. They argued that the performance of the 115mm Molot gun was inferior to the 100mm D-54 both in terms of anti-armor penetration and the accuracy of the high-explosive fragmentation round at long ranges. This was becoming increasingly important in Soviet tactical doctrine following the advent of NATO long-range infantry anti-tank missiles. The D-54 with expensive tungsten-carbide APDS ammunition could penetrate 350mm at 1,000m, compared with 250mm with the 115mm APFSDS using cheap steel penetrators. Even though the tank bureaucrats in Moscow were not happy with Khrushchev and the upstarts from Nizhni-Tagil upsetting their plans, senior army officials had other ideas.

In December 1960, the new American M60 tank was issued to US troops in Europe for the first time. The initial Soviet evaluation of the design was made available to senior army officers in January 1961, recognizing that it had better glacis armor than the previous M48 and that its new 105mm gun was superior to the 100mm gun on the T-54/-55. The commander of the Soviet Ground Forces, Marshal V. I. Chuikov, was infuriated to learn that NATO was receiving a 105mm tank gun. Chuikov, the victor of Stalingrad, was a coarse and profane soldier of the old school, with no subtle understanding of tank technology. When informed that the next-generation *Obiekt 430* tank would still be armed with a 100mm gun even though NATO now had a 105mm gun, he made it abundantly clear that he wanted the next Soviet tank to have a bigger gun than NATO's. Chuikov did not want to hear any technical arguments about the advantages of the D-54 100mm gun, and since Khrushchev had already demanded that heavy-tank production cease in favor of missile tanks, this meant that a larger gun would have to be mounted on the medium tanks. He called the head of the GBTU Main Armor Directorate, Marshal Pavel P. Poluboyarov, into his office in Moscow for a severe dressing down. Poluboyarov admitted that Uralvagon had developed a tank with a 115mm gun, but that there had been problems with the stabilizer. Chuikov screamed at Poluboyarov, "Why are you jerking me around over this stabilizer? I don't care if it's mounted on a pig! Just come up

with this gun!" Chuikov demanded that a more powerful gun be fielded immediately and he didn't care whether it was mounted on the preferred *Obiekt 430* modified with the 115mm gun or the *Obiekt 166*. Since the *Obiekt 166* had already been designed around the 115mm gun, it was ready for production. On the other hand, the *Obiekt 430* would have to be redesigned as the *Obiekt 432*, and the U-5TS gun would have to be modified to accept split-case ammunition because the small internal volume of the tank needed an autoloader that could only handle two-part ammunition. This would take years to develop, and Chuikov made it very clear he wanted a more powerful tank now.

To placate the tank bureaucracy as well as Chuikov, in July 1961 the head of the defense industry recommended adopting both the *Obiekt 166* with the U-5TS Molot 115mm gun as well as the related *Obiekt 165* with the rifled D-54 100mm gun. Government approval took place on August 12, 1961, with the *Obiekt 166* being designated as T-62. On January 8, 1962, *Obiekt 165* was accepted for Soviet Army use as the T-62A.

The loader's station on the right side of the T-62 turret provided access to the ammunition stowed in the front right corner of the hull. These racks were actually built into the forward fuel tanks. The rotating turret floor is also evident in this view. (Author)

A total of 25 T-62 tanks were built at Uralvagon in late 1961 and dispatched to the Carpathian Military District for troop orientation. Production temporarily halted in the first half of 1962 to prepare the machine tooling for large-scale manufacture that began on July 1, 1962, with 270 completed that year along with the first five T-62As. The T-62 was first deployed in significant numbers in the Soviet Group of Forces Germany in 1963.

Soviet Medium Tank Production 1960–65

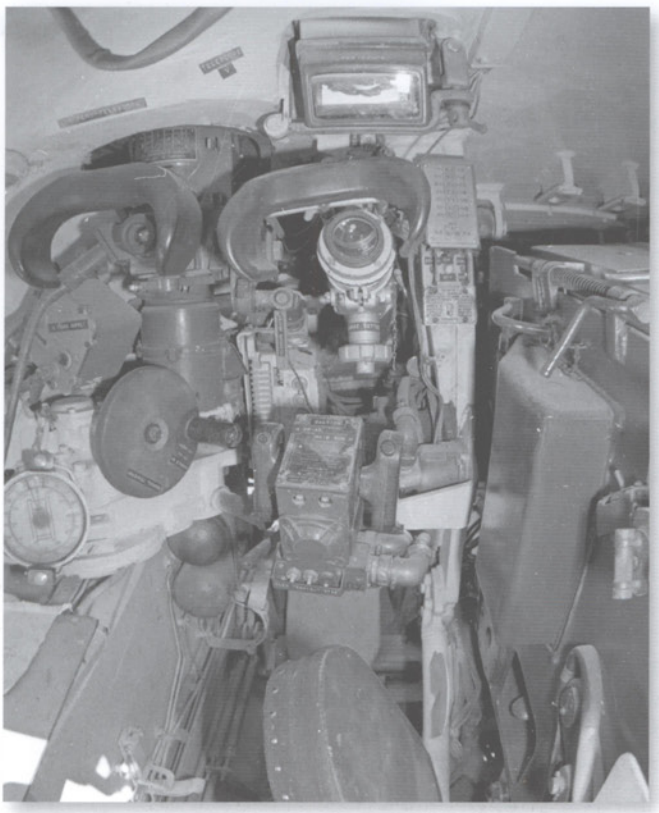
	1960	1961	1962	1963	1964	1965	Total
T-55	2,294	2,305	1,676	295	20	30	**6,620**
T-55A	0	0	20	465	610	440	**1,535**
T-62	0	25	270	1,069	1,521	1,450	**4,335**
T-62A	0	0	5	0	0	0	**5**
T-62K	0	0	0	31	79	50	**160**
T-64	0	0	0	1	90	163	**254**
Total	2,294	2,330	1,971	1,861	2,320	2,133	**12,909**

The production of two nearly identical tanks, the T-62 and T-62A, with two different types of ammunition, raised hackles with senior Soviet Army commanders. The D-54 100mm rifled gun offered better accuracy than the U-5TS Molot 115mm gun at longer ranges, but testing of production guns found performance problems when firing the APDS ammunition due to sabot

interactions with the muzzle brake. The U-5TS Molot had its own accuracy problems due to its hasty origins since it was developed by simply boring out the 100mm rifled gun rather than starting from scratch; barrel stiffness was marginally inferior to the original 100mm gun. The U-5TS had some advantages over the D-54 in terms of cost, since the 115mm APFSDS projectile used a steel penetrator which was much less costly than the 100mm APDS projectile with an expensive tungsten-carbide core; by switching the 115mm penetrator from steel to tungsten carbide, its armor penetration could be substantially enhanced and give it performance better than the 100mm D-54, as was in fact done later. The one remaining virtue of the 100mm D-54 was the superior accuracy of its HE-Frag projectile at longer ranges, a significant concern for the Soviet Army in the early 1960s, which was growing increasingly aware of the threat posed by NATO long-range anti-tank missiles and the need for a precise HE-Frag round to deal with this threat.

The final nail in the coffin of the D-54 gun was a new initiative to develop autoloaders for both the Kharkov and Nizhni-Tagil tanks, and the ammunition industry balked at the idea of developing split-round ammunition for both 100mm and 115mm calibers. These lingering problems led to a decision to take the D-54 out of production and in October 1963 the government informed Uralvagon to limit production to the T-62 and cancel any production of the T-62A beyond the first five. Likewise, Kharkov's *Obiekt 430* next-generation tank was cancelled in favor of the *Obiekt 432*, which was armed with the D-68 115mm gun. This was essentially similar to the U-5TS on the T-62 but used new split-case ammunition suitable for the autoloader.

Even after being accepted for service, the T-62 was widely regarded as a mere stop-gap until the preferred *Obiekt 432* emerged from Kharkov. Indeed, the December 1962 tank-production plans anticipated ending manufacture of the T-55 at Nizhni-Tagil and Omsk in 1965 and ending production of T-62 at Nizhni-Tagil in 1966. As events would transpire, the simple and robust T-62 had more than a decade of production in store because of lingering shortcomings with the *Obiekt 432*. Production continued until October 1973, by which time some 19,019 T-62 tanks had been manufactured at Nizhni-Tagil. The *Obiekt 432*, eventually accepted for production in 1967 as the T-64, had prolonged problems with engine reliability and fragile running gear. Even before these problems were ironed out, the advent of the new British Chieftain armed with a 120mm gun encouraged the Soviet Army to follow suit with a 125mm gun, so the *Obiekt 432* was re-designed again as the *Obiekt 434* and accepted for production in 1969 as the T-64A. This was the first version of the tank to be manufactured in large numbers. However, the delays from 1962 to 1969 in the Kharkov



The gunner in the T-62 sat in front of the commander in the left side of the turret. The gun could be aimed either through the telescopic TShS-41U (on the right) or the TPN-1-41-11 day/night periscopic sight (to the left). (Author)

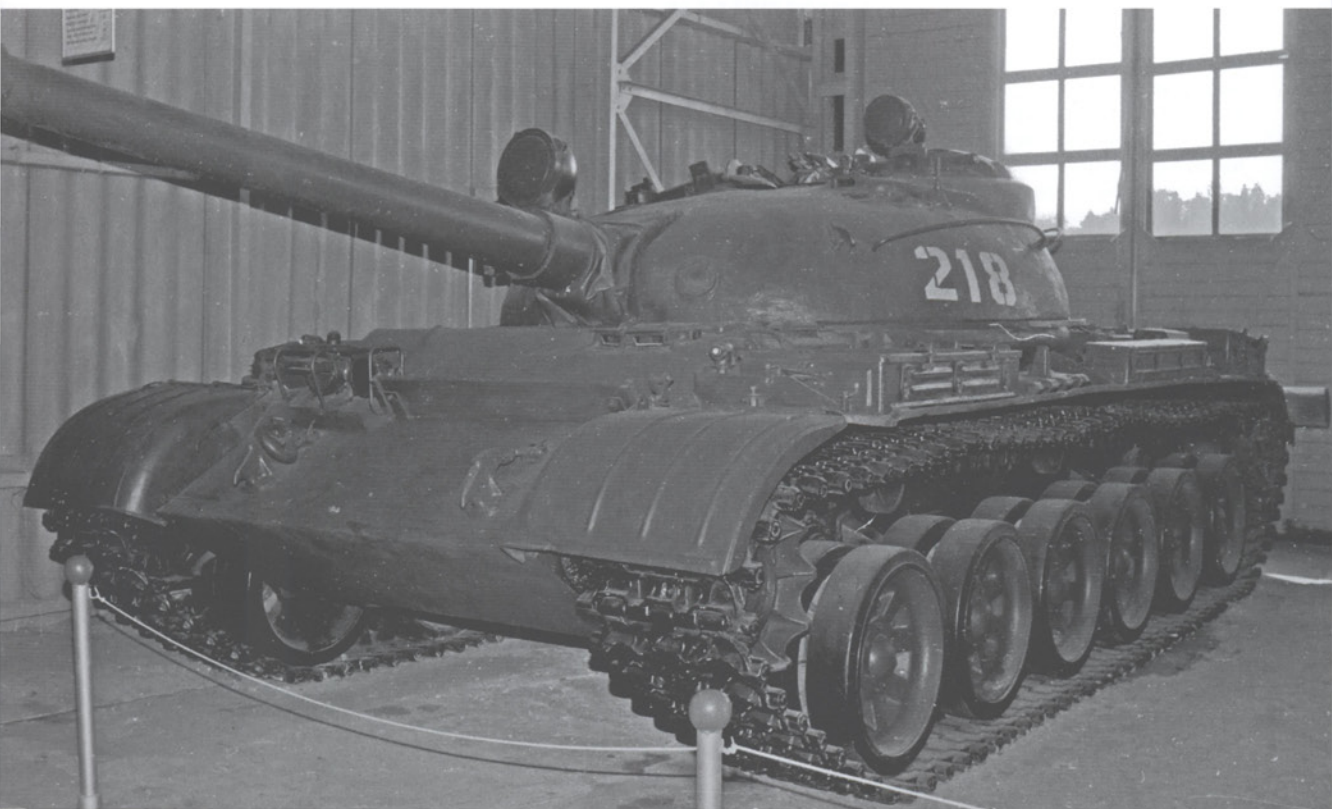
tank program left a gap in Soviet tank production that was filled by the less elaborate but adequate T-62. Instead of being a mere stop-gap, the T-62 became the mainstay of the Soviet Army well into the mid-1970s. Indeed, by 1973, the T-62 constituted over 75 per cent of the Soviet Army's premier tank units in the Group of Soviet Forces Germany.

The T-62 saw its public debut during the May Day parade of 1965 in Red Square, Moscow. The T-62 first came to widespread attention in August 1968 when the Warsaw Pact conducted Operation *Danube* to crush the political reform movement in Czechoslovakia. Some Soviet T-62 tank regiments from the Group of Soviet Forces Germany were among the units taking part.

ON THE PATH TO T-72

With production of the T-62 under way, Uralvagon continued to work on further elaboration of the design. The suspension of the T-55/T-62 family was getting long in the tooth, and the large road-wheels added weight to the design. A new configuration using smaller, lightweight, aluminum road-wheels was examined on an *Obiekt 166* test-bed and subsequently incorporated into a more elaborate evolution of the design, the *Obiekt 167*. The first two *Obiekt 167*s were built in 1961 and served as the test-beds for a host of improvements in the powertrain and suspension, including a new 700hp Chelyabinsk diesel engine. In parallel to this program, Uralvagon also had a variety of other test-beds under construction to examine new engines including the *Obiekt 166M* with a multi-fuel V-36F engine, the *Obiekt 167T* with a gas turbine engine and the *Obiekt 177* with a supercharged Chelyabinsk diesel engine.

The gun crisis of 1960 continued to percolate through the mid-1960s, especially as more information on the British Chieftain tank emerged. Once again, the Soviet Army commanders were aghast to learn that NATO was fielding a tank with a gun bigger than their own, this time a 120mm rifled

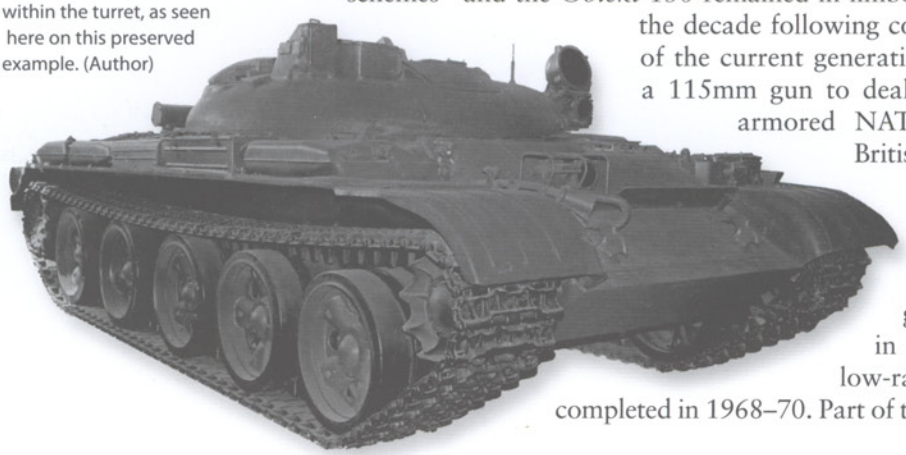


The *Obiekt 167* examined a new suspension that moved away from the large road-wheels of the Kharkov-designed tanks since the BT tank of the early 1930s. Although considered for the aborted T-62B project, this suspension would be part of the Uralvagon features that led to the T-72 tank. This is one of the *Obiekt 167* pilots currently preserved at the Kubinka tank museum. (Author)

gun. Until the early 1960s, this would have been shrugged off since the Soviet Army had its own heavy tanks such as the T-10 armed with a 122mm gun. But Khrushchev had put an end to heavy-tank development, and so no modern heavy tank was ready to counter the Chieftain. A larger gun for the medium tanks was needed. As a result, a program to develop a gun in the 122–125mm range was begun in June 1961. Petrov's OKB-9 in Perm pushed for a 125mm smooth-bore gun that would eventually emerge as the D-81, but there were other alternatives including a new rifled D-83 122mm and the rifled D-85 125mm design. The artillery community preferred smooth-bores, especially the influential Marshal P. N. Kuleshov, who headed the Main Missile and Artillery Directorate (GRAU) that supervised gun development. A further incentive for sticking with smooth-bore designs was the initial efforts to develop tube-fired, guided anti-tank projectiles. As a result, the D-81 125mm smooth-bore eventually emerged as the preferred armament for the next-generation Soviet tank. In the case of the Kharkov programs, this was adopted on the *Obiekt 434*, which was accepted for service in 1969 as the T-64A tank, and on the T-62 family with the *Obiekt 167M*, which was intended to enter service as the T-62B. To prevent yet another fruitless competition between Kharkov and Nizhni-Tagil, in March 1964 the Council of Ministers refused the Uralvagon request to proceed with development of the T-62B. Nevertheless, work on the autoloading system design for this tank was then diverted to the *Zhelud* (Acorn) project, which examined the use of an autoloader for the 115mm gun on the T-62. Since the system had been designed around the D-81 125mm gun, the initial *Zhelud* test-bed built in 1967 consisted of a T-62 fitted with the 125mm gun and autoloader. While the *Zhelud* program never reached the production stage, the technologies of the *Obiekt 167M* and *Zhelud* later formed the basis for Uralvagon's subsequent T-72 Ural tank, which replaced the T-62 in production in 1973.

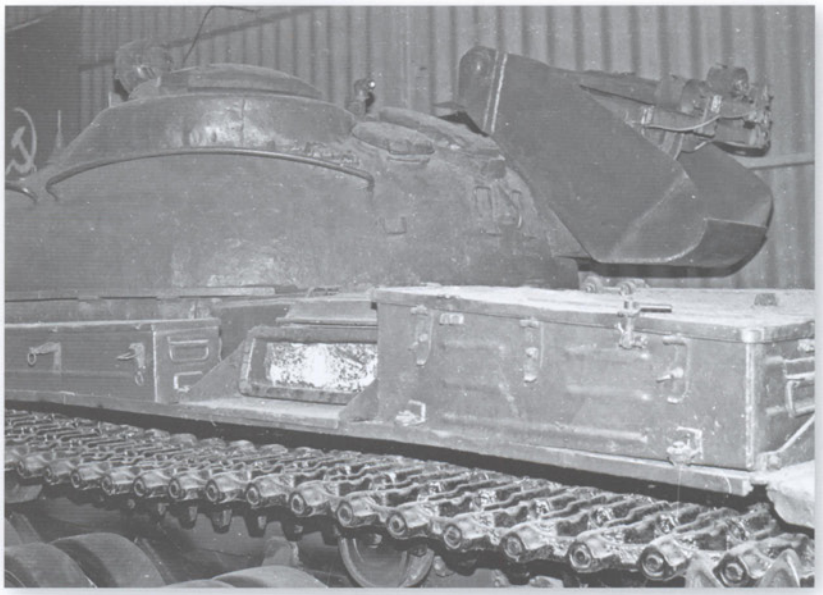
SWAN-SONG OF THE MISSILE TANK

Although the *Obiekt 150* missile tank pre-dated the T-62, it entered production six years later in 1968. Part of the delay was the immaturity of missile technology in the late 1950s, but politics also played a large role in the delay. The *Obiekt 150* had cleared most of its trials by 1964, but Khrushchev's removal from power in October 1964 took away the main supporter of the missile tank idea. There was a general disdain for Khrushchev's "hare-brained schemes" and the *Obiekt 150* remained in limbo. It was revived later in the decade following concern over the inability of the current generation of Soviet tanks with a 115mm gun to deal with the most thickly armored NATO tanks such as the British Chieftain. The *Obiekt 150* appeared to be a good stop-gap until the next-generation tanks with the 125mm gun arrived. As a result, in 1968 it was put into low-rate production with 220 completed in 1968–70. Part of the problem was the issue



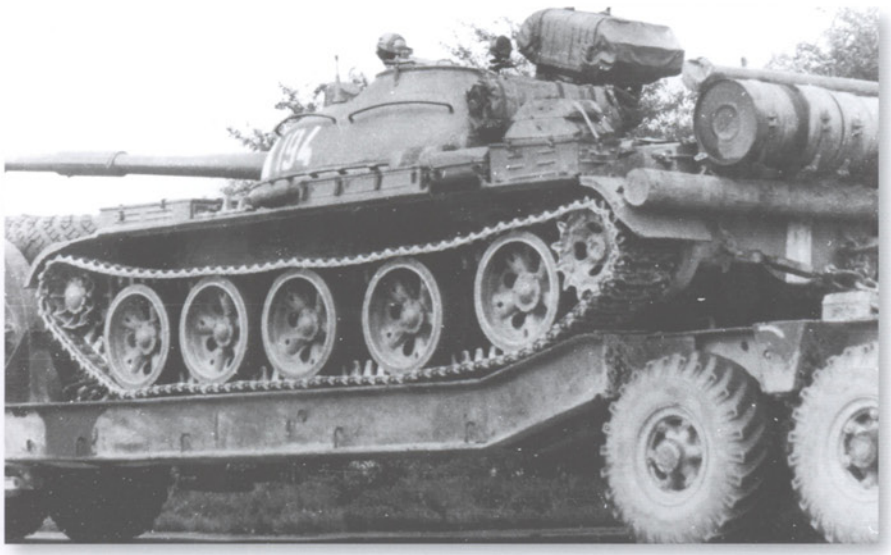
Development of the *Obiekt 150* missile tank was so protracted that it did not enter production until 1968. By this stage, its role had changed and was thus designated as the IT-1 tank destroyer. The missile launcher was contained within the turret, as seen here on this preserved example. (Author)

of where it would be best deployed. It was classified as the IT-1 tank destroyer (*istrebitel tankov*) and issued to battalions in the Belarus and Carpathian Military Districts. In the Belarus MD, the battalions were deployed with tank crews in motor rifle divisions to provide long-range fire support during mechanized operations. In the Carpathian MD, they were deployed as separate corps- or army-level tank destroyer battalions with artillery crews. Neither approach was specially successful. The tankers did not like the IT-1 as it only had 15 3M7 Drakon missiles on board, and it could only be fired from long range since it had a dead zone of about 300–500m before the guidance system could take over control of the missile. The artillery crews didn't like it as it was a complicated vehicle to service and operate compared to other wheeled tank destroyers based on the BRDM-1 and BRDM-2 chassis, and the thick armor was of little consolation as the tactics called for the vehicle to conduct its launches 2 or 3km behind the forward edge of battle, where the risk of direct fire from NATO tanks was small. It had extremely good accuracy for its day, and the commander of one of the battalions later recalled that during the 1970 Dvina wargames, his unit scored a dozen hits with a dozen missiles. Nevertheless, the concept had fallen out of favor and it was retired very soon after its deployment starting in 1972–73; the chassis were converted into recovery vehicles.

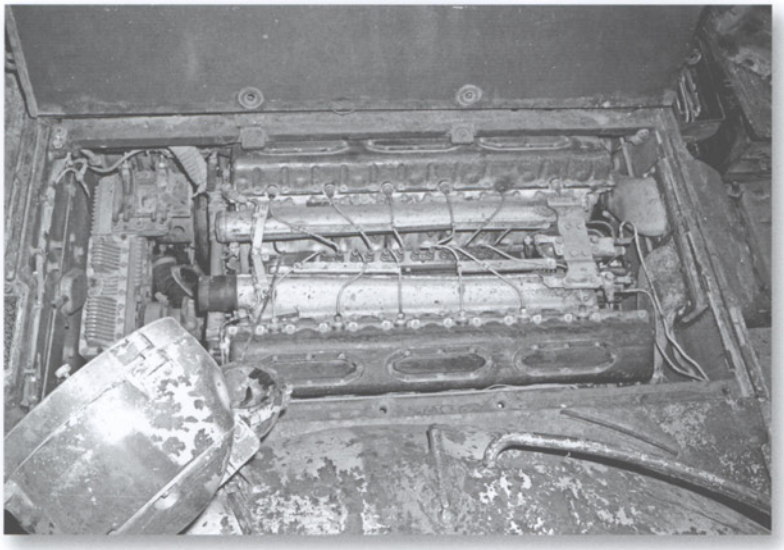


Instead of basing a tank's armament on missiles, it was possible to supplement the main gun with missiles for long-range engagements. This *Obiekt 167* prototype was modified with a two-rail launcher on the rear corner of the turret for the 9M14 Malyutka (AT-3 Sagger) anti-tank missile. (Author)

Although Khrushchev's missile mania had fallen into disfavor, there were a number of attempts to incorporate a secondary anti-tank missile armament



A small number of T-62s were modified to carry a fully enclosed launcher pack containing two 9M14M Malyutka wire-guided anti-tank missiles. They were deployed for a short time in the Group of Soviet Forces Germany as seen here, but the concept did not prove popular and was abandoned. (US DoD)



The T-62 engine deck was modified during the 1967 production run with a large single-piece engine access hatch, as seen here during T-62 maintenance. As can be seen, the V-55V engine was transversely mounted. The boxes on the right fender are elements of the air filter. (Author)

on the T-62 as a means to extend its effective anti-tank range. This involved the incorporation of a pair of 9M14M Malyutka (AT-3 Sagger) wire-guided missiles on a launch array on the rear corner of the turret. The initial configurations used exposed launch rails but a more refined version placed the missiles within a container for better weather protection. A small number of these were manufactured and deployed on a trial basis with T-62 regiments in the Group of Soviet Forces Germany but the concept was never fully accepted.

T-62 EVOLUTION

The T-62 underwent continual modernization both during its production run from 1962 to 1973, and afterwards as part of a periodic modernization effort. The first major changes occurred in 1967 with a reconfiguration of the engine deck access hatches. The two small hatches were eliminated in favor of a large one-piece assembly. OPVT deep wading equipment was added to facilitate river-crossing operations. In 1972, as part of the general upgrade affecting the T-55 fleet as well, the turret of the T-62 was modernized as the *Obiekt 166 sb.4* to permit a 12.7mm DShKM anti-aircraft machine gun to be fitted over the loader's hatch. The addition of this heavy machine gun was due to the growing threat of NATO anti-tank helicopters such as the US Army's AH-1 Cobra armed with TOW anti-tank missiles. The need for a level hatch for the machine gun's ring mount led to a change in the shape of the right side of the turret. This version was incorrectly called T-62A in NATO; it had no official Soviet designation change, though the Nizhni-Tagil plant called it the T-62 Model 1972. Other changes on this version included a new stowage arrangement for the OPVT on the turret side, a larger vehicle identification light, and improvements to the deep-wading equipment. Unlike the T-55, the practice of adding a new machine gun mounting to older T-62s was not done. In the late 1970s, the T-62 began receiving the better RMSh track developed for the T-72, which required a new drive sprocket.

Besides the basic version of the T-62, the associated T-62K command tank was manufactured in parallel. This corresponded to the T-55K types, and had one additional R-122 radio, a TNA-2 navigation system, and a 4m antenna. One of the main issues with T-62 firepower was its relatively poor accuracy at ranges beyond 1,000m due to the use of a very simple stadiametric

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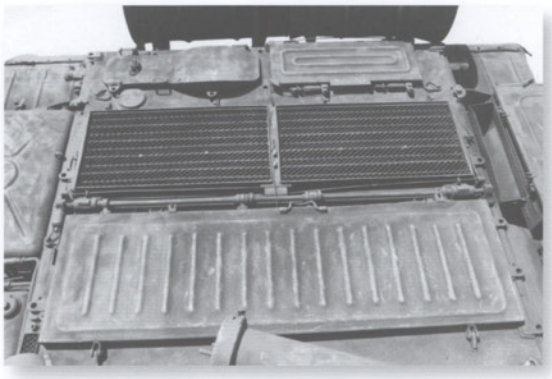
IT-1 TANK DESTROYER, SEPARATE TANK DESTROYER BATTALION, BELARUS MILITARY DISTRICT, 1970

The IT-1 tank destroyer was considered so secret that very few photos of it in combat service survive; those that do show it in overall camouflage green with no tactical markings. The Drakon missile was finished in the same color.



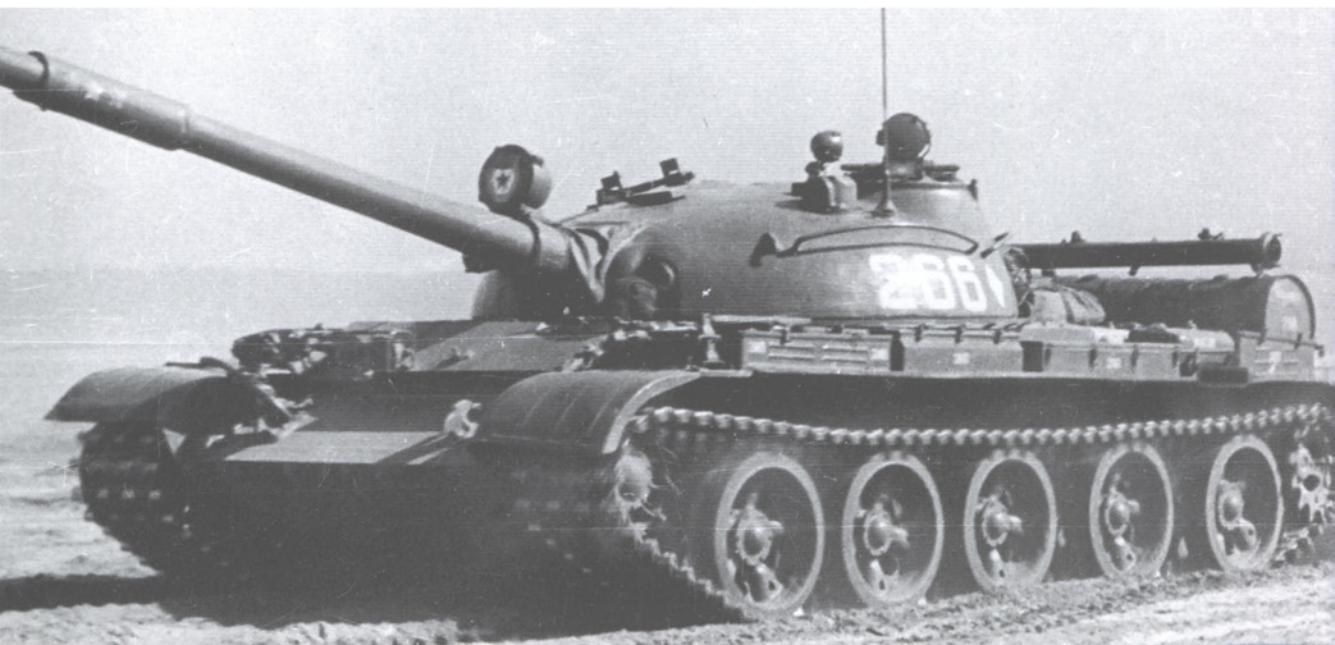
The new engine deck is most easily identifiable by the presence of this stamped metal panel stored above the engine access hatch. This panel is used to seal the two large radiator grills behind it when the tank is prepared for deep wading. This is a T-62 Model 1972 which had the OPVT snorkel stowed on the left rear side of the turret. (Author)

rangefinding system. This was not a great issue when firing the very fast APSFDS ammunition, but became a bigger problem when firing the HE-Frag and HEAT ammunition. In 1975, this shortcoming was addressed with the advent of the KTD-1 laser rangefinder that could be retrofitted to the T-62 by mounting it in an armored box over the main gun. A variety of firepower enhancements were suggested by Uralvagon but not accepted. There was a proposal to re-arm the T-62 fleet with either the new 125mm smooth-bore or 122mm rifled tank gun, but this was rejected.

A number of studies were conducted in the 1960s and 1970s to upgrade the armored protection of the T-55 and T-62 series, especially to deal with the growing threat of guided anti-tank missiles. The first of these was the 1964 program to develop the ZET-1 (*zashchita ekrannaya tankovaya*: tank protective screen), a protective screen attached to the main gun. This folded like an umbrella when not in use, and in combat was unfolded; the wire mesh was sufficient to detonate incoming warheads such as those on anti-tank missiles and rockets. In addition, small aluminum "flipper" panels were fitted to the hull side. These folded flush against the side of the tank when not in use, but in combat were folded outward to protect the lower hull sides. Although a state commission thought the idea worthy of adoption, the ZET-1 was ignored by the tank force, which preferred to wait for a more robust alternative.

The anti-tank missile threat became all the more apparent in the early 1970s with the effective American use of TOW anti-tank missiles against North Vietnamese T-54A tanks during the 1972 offensive, and the Egyptian use of Soviet Malyutka anti-tank missiles against Israeli tanks in the 1973 war. Even though the T-62 was no longer the frontline tank of the Soviet

The T-62 Model 1967 improvements included the addition of the OPVT deep-wading system, as is evident on this tank of the Northern Group of Forces in Poland in the 1980s with the OPVT turret snorkel stowed on the rear over the supplementary fuel drums. On the later T-62 Model 1972, the OPVT snorkel was usually stowed on the left rear corner of the turret.

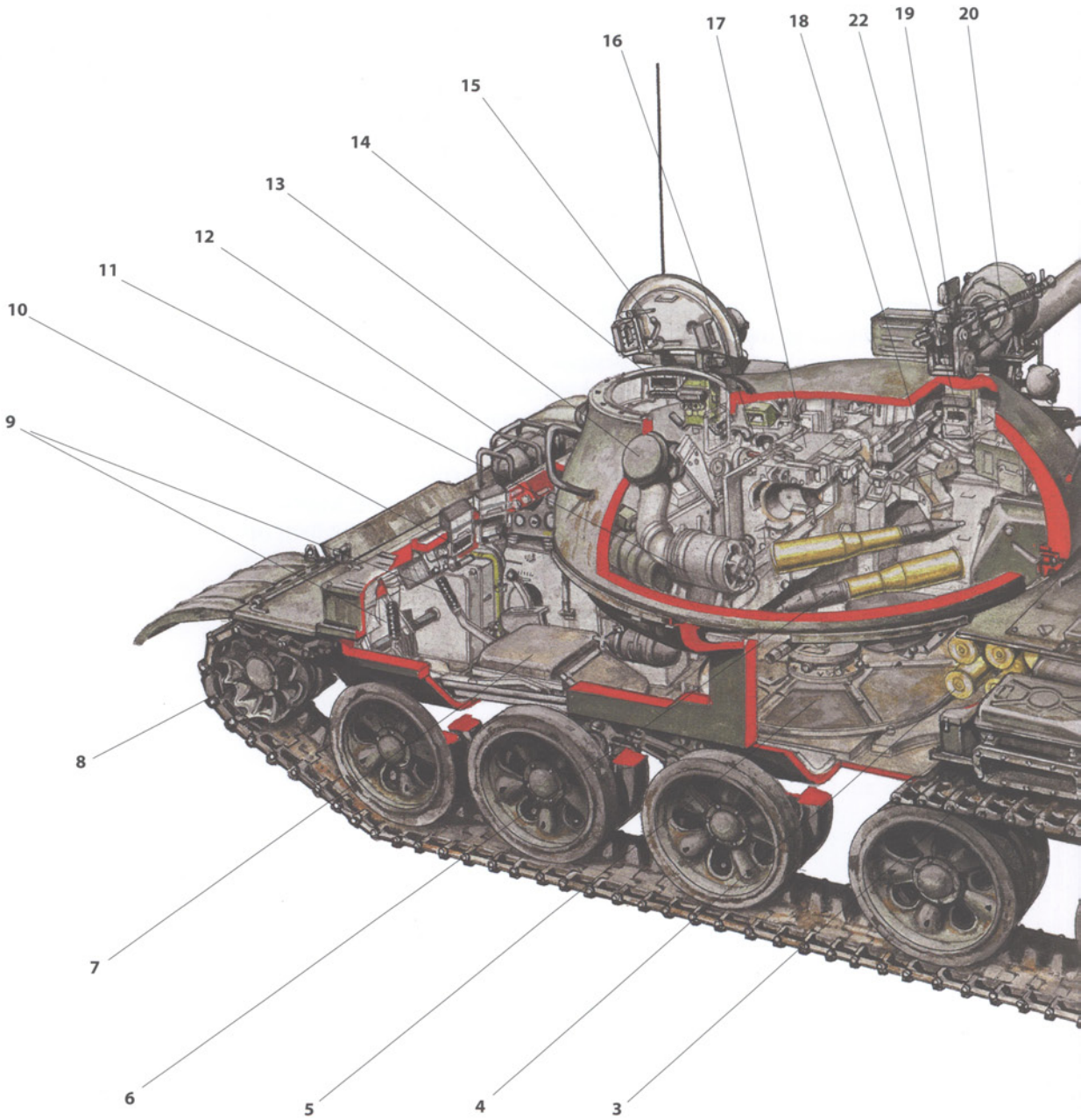


The T-62 could be fitted with the usual panoply of Soviet mine-clearing equipment. This T-62 Model 1967 of the GSFG in East Germany has the front hull attachments in place for the KMT-4 mine rakes though the rakes are absent. (US DoD)

Army by the 1980s, it still made up more than a quarter of its tank force. As a result, a complete modernization package was developed at Uralvagon with enhanced armor as one of the key ingredients. On July 25, 1981, the Soviet government approved the modernization program as part of the 1981–85 five-year plan, authorizing the modification of 785 T-62 tanks through 1985. Tanks with the upgrade package were designated as T-62M.

The most obvious element of the package was the new BDD appliqué armor kit. This was an offshoot of multi-layer laminate armor developed by NII Stali (Steel Scientific Research Institute) for the T-64A and T-72A, but instead of being incorporated into the turret casting, it could be bolted on to the exterior. The NII Stali BDD appliqué armor was popularly known as "brow" armor (*brovi*) because the turret panels looked like a pair of eyebrows when fitted to the tank. The glacis appliqué was an armored box and inside were six layers of 5mm steel plate spaced 30mm apart with the cavity between filled with penapolyurethane. The turret panels were cast armor, 60mm on the outer side, with a similar layered interior. This protection was similar to that provided by early versions of NATO Chobham

A T-62 Model 1972 of the Northern Group of Forces in Poland in the 1980s with the KMT-4 mine rakes.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TECHNICAL DATA

Crew 4 (commander, gunner, loader, driver)

Weight 37.5 metric tons

Length overall 9.335m

Hull length 6.63m

Width 3.3m

Armament U5-TS (2A20) 115mm smooth-bore gun with Meteor 2-axis stabilizer; -5 +18 degree elevation

Rate of fire 3–5rpm

Main gun ammunition 40 rounds (14 APFSDS, 20 HE-Frag, 6 HEAT)

Fire control TShS-41U gunner's telescope and TPN-1-41-11 day/night sight

Rangefinding stadiametric with manual ballistic calculations

Coaxial machine gun 7.62mm PKT; 2,500 rounds of stowed ammunition

Engine V-55 580hp diesel with synchronized, constant mesh transmission; planetary final drive

Maximum speed 50km/h

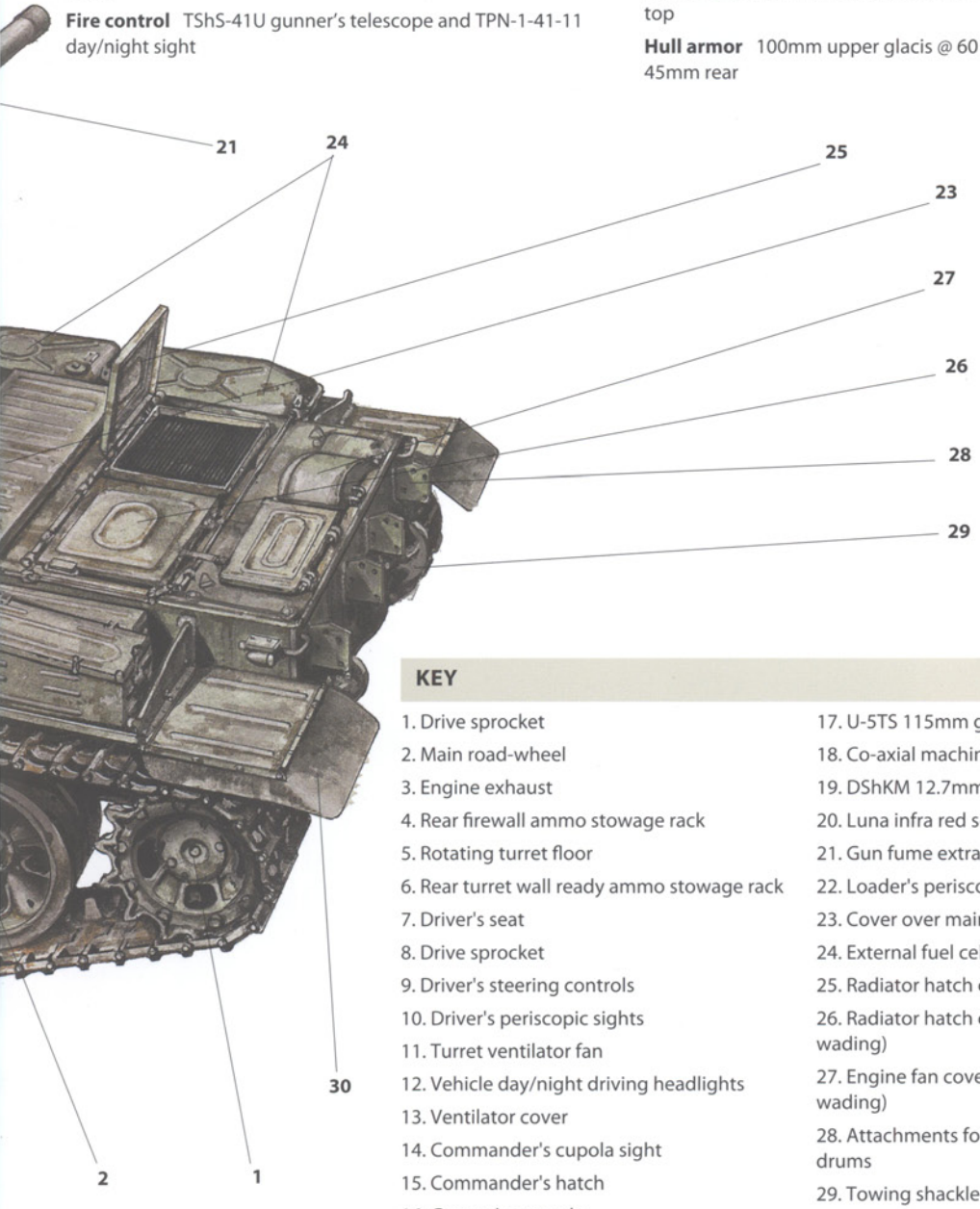
Road range 450km; 650km with two 200-liter external drums

Fuel stowage 675 liters internal; 285 + 400 liters external

Radio R-113

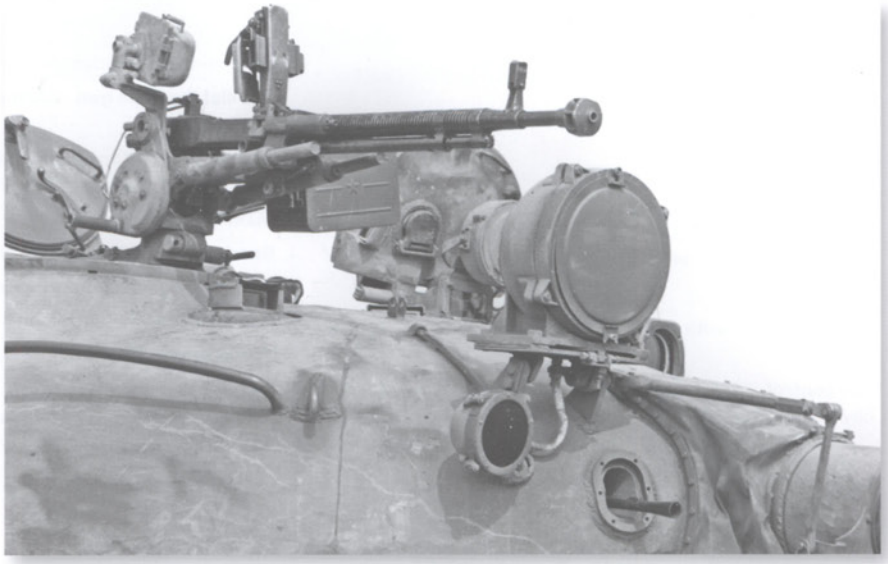
Turret armor 230mm front, 120mm sides, 60mm rear, 30mm top

Hull armor 100mm upper glacis @ 60 degrees, 80mm side, 45mm rear



KEY

1. Drive sprocket
2. Main road-wheel
3. Engine exhaust
4. Rear firewall ammo stowage rack
5. Rotating turret floor
6. Rear turret wall ready ammo stowage rack
7. Driver's seat
8. Drive sprocket
9. Driver's steering controls
10. Driver's periscopic sights
11. Turret ventilator fan
12. Vehicle day/night driving headlights
13. Ventilator cover
14. Commander's cupola sight
15. Commander's hatch
16. Gunner's controls
17. U-5TS 115mm gun breech
18. Co-axial machine gun
19. DShKM 12.7mm machine gunb
20. Luna infra red searchlight
21. Gun fume extractor
22. Loader's periscopic sight
23. Cover over main engine access hatch
24. External fuel cells
25. Radiator hatch cover (open)
26. Radiator hatch cover (closed for deep wading)
27. Engine fan cover (closed for deep wading)
28. Attachments for auxiliary external fuel drums
29. Towing shackles
30 Rear mud flap



The T-62 Model 1972 introduced a modified loader's hatch fitted with a 12.7mm DShK heavy machine gun as a means to help defend against the growing threat of NATO anti-tank helicopters. (US DoD)

armor and this kit was similar to the "Stillbrew" upgrade for the Chieftain. The new turret armor increased the tank's protection from its basic 210mm-thick steel to a steel equivalent of 380mm against kinetic energy projectiles such as APFSDS, and 450mm against shaped-charge projectiles such as HEAT and missile warheads. An optional kit was also prepared to protect the rear of the turret and parts of the hull from RPG attack using several panels of lightweight slats (*reshetki*). The mine threat in Afghanistan led to the development of a special cellular armor package for the tank belly. The driver's seat was reattached to the side plate to reduce the likelihood of spinal damage when a mine exploded underneath. Side skirts were added to provide additional protection to the suspension and hull sides against shaped-charge warheads. The Type 902B Tucha smoke discharger system was included in the protective package which fired 3D6 81mm smoke grenades. The total package added about 2.2 metric tons to the weight of the tank.

The main firepower enhancement was the Volna fire-control upgrade which included the KTD-2 laser rangefinder, the BV-62 ballistic computer, the

The T-62 Model 1972 was introduced in the final two years of T-62 production, but is one of the better-known versions since so many were exported to the Middle East. This is an example in Soviet service in the 1970s.

TShSM-41U gunner's sight, and the Meteor M1 gun stabilization system. A thermal sleeve was also added to the gun barrel to reduce barrel warpage. A portion of the upgraded tanks were modified to permit the use of the new Sheksna guided 115mm tank-fired missile. The 9K116-2 Sheksna guided projectile system was developed by the Shipunov KBP (Precision Machinery Design Bureau) in Tula and consisted of a 3UBK23-2 115mm ammunition round encasing a 9M117 missile. This round resembled a conventional 115mm round and was handled and loaded in the same fashion. To guide this laser-beam riding projectile, the gunner's normal TPN-1 sight was replaced by the 1K13 sight/fire-control system. The missile was fired like a conventional round, with a rocket engine igniting 1.5 seconds after the round was fired. The sustainer rocket in the missile burned for 6 seconds. The missile had a flight time of up to 41 seconds, an effective range of 4km against both helicopters and tanks, and an effective penetration of 1,000mm against homogenous steel armor. Generally, the tank would carry four to six of the missile rounds in addition to its usual combat load. The main drawback to this weapon was its high cost – four missiles represented about double the purchase cost of the tank itself. On the other hand, it made up for the inadequate performance of the T-62 in long-range engagements with more modern NATO tanks without requiring the purchase of a new tank. Because of the substantial additional costs of the Sheksna missile system and the lack of need for this weapon in theaters such as Afghanistan, a portion of the T-62M upgrade fleet was remanufactured without it, and these vehicles were designated as T-62M1.

The full potential of the 115mm gun could not be exploited because of the shortcomings of the stadiametric rangefinder used in the production tanks. As a result, the first rebuilding upgrade in 1975 was the introduction of a KTD-1 laser rangefinder over the main gun barrel to improve long-range accuracy, as seen on this remanufactured T-62 Model 1962 with the GSFG in East Germany in the 1970s. (US DoD)

The T-62 upgrades were applied piecemeal. This T-62 Model 1962 in the GSFG in East Germany in the 1980s has the new RMSh tracks but it has not yet been fitted with the KTD-1 laser rangefinder. (US DoD)

This T-62 Model 1972 shows several of the re-build features seen on the series in the 1980s, including the KTD-1 laser rangefinder and the newer RMSh tracks.

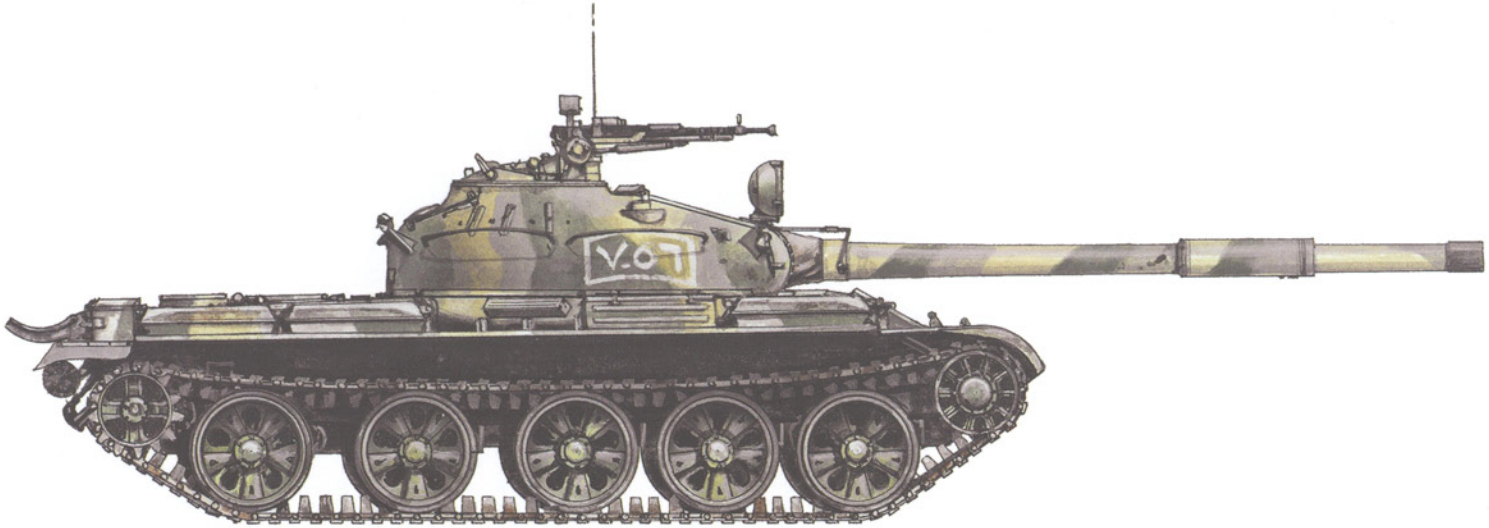
The T-62M incorporated a number of automotive improvements including the V-55U engine and improved torsion bars. To further confuse matters, there were a variety of packages fitted to the T-62M1 tanks without the Sheksna missile. The T-62M1-1 was a T-62M1 with the V-46-5M engine and was essentially the same as the T-62M-1, but without the Sheksna. T-62M1-2 was a version of the T-62M1, but lacking the glacis appliqué armor. T-62M1-2-1 was a T-62M1-2, but fitted with the improved V-46-5M engine. At the time of the Soviet collapse in 1991, there were only 243 T-62Ms in service in areas counted under the Conventional Forces in Europe Treaty (CFE), meaning the western regions of the Soviet Union and units stationed in the Warsaw Pact countries; of these 60 were T-62M1 and 2 were T-62MK command tanks. By way of comparison, there were still 1,665 basic T-62s still in service without the armor or fire-control upgrades.

Although the NII Stali brow armor was a main armor upgrade package for the T-62, a number of other options were examined though not widely applied. The T-62MV was fitted with the Kontakt reactive armor package developed by NII Stali and had all of the other modifications of the T-62M including the Volna fire controls, Sheksna system, and V-55U engine upgrade.

D

T-62 MODEL 1972, SYRIAN MECHANIZED DIVISION, BEKAA VALLEY, LEBANON, 1982

The Syrian Army typically camouflaged its Soviet-supplied tanks in a pattern of sand yellow and gray over the usual Soviet camouflage green color. Tanks usually carried a three-digit Arabic number on the turret, in this case 706 with a box; the significance of the box is not clear but it may have distinguished regiments from one another. The Syrian Army used a complicated "letter-box" system of regimental insignia on the front and rear of the vehicle, consisting of two geometric symbols with the one on the right indicating the division, and a two-color/divided symbol on the left identifying the regiment. After the 1973 war, the Syrian Army adopted the marking pattern as seen here. A mechanized division is distinguished by a rectangle on the right; armored divisions use a triangle. The subordinate units are identified by a partitioned square to the left, with the upper triangle identifying the brigade and the lower triangle the battalion, in this case apparently white over yellow. The colors of this division have not been positively identified in unclassified sources. Besides the unit insignia, the Syrian Army usually painted a license number on armored vehicles consisting of the phrase "army" in Arabic above, and a registration number below, in this case 161040.



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الجيش

ABOVE
The T-62M introduced the capability to fire the new Sheksna 115mm guided missile, seen here on the right. This missile was contained in a casing like a conventional round and was essentially similar to the 100mm Bastion seen to the left. (Author)

ABOVE RIGHT
The large inventory of T-62 tanks around the globe has encouraged numerous upgrade proposals. One of the more elaborate is the T-62AG offered by the Kharkov plant in Ukraine, which adds the latest generation of reactive armor, the 125mm smooth-bore gun, and a new 5TDFM 850hp diesel powerpack. (KhKBM)

Final T-62MV upgrades had the improved V-46-5M engine and were designated T-62MV-1. At the time of the Soviet collapse in 1991, there were only 113 T-62MVs in service in the western Soviet Union, making it one of the least common types.

The Drozd active protection system was offered as an alternative to passive and reactive armor arrays for tank defense against anti-tank missiles such as the T-62D; those with the later V-46-5M engine upgrade were designated T-62D-1. The T-62D was accepted for service in 1983 but this particular conversion does not appear to have been undertaken in any significant numbers. Part of the reason for the relatively small numbers of T-62 upgrades was the declining numbers of T-62s still in Russian service after the Soviet collapse. A large portion of the inventory was set aside for scrapping in favor of retaining more modern types. By 2002–03, there were only 265 T-62s of all types in Russian service in the CFE region out of more than 8,000 tanks still in service.

EXPORT BONANZA

Unlike the T-54 and T-55, the T-62 was never license manufactured outside the Soviet Union. Polish and Czech sources suggest that the reasons were in part due to cost. The sale price of the T-62 was R250,000, which was about 50 per cent greater than the cost of the T-55 at the time. Furthermore, senior Warsaw Pact officials were aware that the Soviet Army was adopting the new T-64A as their "universal tank," so a short-term transition to the T-62 hardly seemed worth the effort. The Soviet invasion of Czechoslovakia in August 1968 also delayed modernization of the Martin tank plant, and political turmoil and economic liberalization in Poland also put a cap on defense modernization there. US intelligence believed that Czechoslovakia manufactured about 1,500 T-62 tanks, but this appears to have been a mistake judging from recent Czech and Slovak accounts. The only Warsaw Pact army to adopt the T-62 was Bulgaria, which acquired about 80, selling these off in 1993–94 to Angola and Yemen. There have been reports that North Korea has manufactured copies of the T-62 as the Chonma tank, but it is not clear whether this is true or whether they are locally improved versions of Soviet manufactured tanks.

Although the T-62 never played a major role in Warsaw Pact modernization, it became a trademark of the expanding Soviet arms trade in the 1970s, especially in the Middle East and Africa. Of the more than 19,000

The T-62 was cleared for export in the early 1970s and sold in large numbers in the Middle East and Africa. This is a T-62 Model 1972 during a parade in Algeria. (US DoD)

T-62 tanks manufactured, over 5,000 were exported in the 1970s and 1980s and more in later years. The figures below are from a variety of sources and many are estimates, as no official data has been released.

T-62 Export 1970–90

Recipient	Quantity	Start of delivery
Afghanistan	100	1982
Algeria	335	1978
Angola	85	1976
Bulgaria	100	1978
Cuba	160	1983
Egypt	580	1971
Iraq	1,600	1973
Korea (DPRK)	200	1975
Libya	350	1974
Mozambique	160	1978
Somalia	70	1977
Syria	1,100	1971
Vietnam	70	1973
Yemen	50	1976

Sales of new tanks largely ended by the early 1980s, but the collapse of the Soviet Union in 1991 led to a second wave of sales as former Soviet republics such as Belarus and Ukraine dumped their older tanks on the market. As a result, T-62s have shown up in additional locations beyond the formal sales programs detailed above, with more recent sales to Sudan, the Congo, and other hot spots.

INTO COMBAT

The combat debut of the T-62 was obscure. Rising tensions on the Soviet–Chinese frontier in 1969 led to periodic outbreaks of fighting, and in March

1969 about 300 Chinese troops occupied the disputed Damansk island in the Ussuri River. The Kremlin ordered the Far East Military District to counterattack and drive them back over to the Chinese side of the river. During the course of the fighting, the commander of the local Iman Border Guards, Colonel D. Leonov, led an attack using four of the new T-62 tanks, but Leonov's was disabled by Chinese RPG-2 rocket fire and fell into Chinese hands. While the loss of a single tank was not especially critical to the Soviet Union, it was a technological windfall for China. The Soviet Union had helped China establish a production line for the T-54A tank in the 1950s before relations had turned sour, but China had fallen badly behind in tank technology. The captured T-62 was a major step forward because of its firepower advances, giving the Chinese tank designers access to a smooth-bore tank gun, gun stabilization, APFSDS ammunition, and fin-stabilized HEAT ammunition. This tank served as the basis for a major Chinese tank modernization effort, and after thorough examination for several years, it was retired to the army museum in Beijing where it resides to this day.

Both Egypt and Syria were heavily resupplied by the Soviet Union after their defeat in the 1967 war. Indeed, the scope of re-armament was so great that the old T-55 tank remained in production at Omsk into the early 1970s specifically for these export requirements. By the early 1970s, the T-62 was the most modern tank the Soviet government was willing to export, and both Egypt and Syria purchased the type. Egypt acquired about 200 T 62s between 1971 and 1973 while Syria acquired about 500. In 1973, Egypt fielded two armored brigades, each with a total of about 95 tanks in three tank battalions. The 18th Infantry Division serving with the Second Army had its 15th Armored Brigade equipped with the T-62; the Third Army's 7th Infantry Division had the 25th Armored Brigade.

The first large-scale fighting involving the T-62 on the Egyptian front during the 1973 war was in the 18th Infantry Division sector near Kantara. On October 8, 1973, General Avraham "Bren" Adan's 162nd Armored Division of the Israeli Army launched a tank counter-attack against the Egyptian forces, which had surged over the Suez Canal the previous days. The division's 217th Armored Brigade under Colonel Nathan Nir, equipped with 71 Centurion Shot tanks, encountered the Egyptian 15th Armored Brigade during the morning fighting and destroyed a number of T-62 tanks in at least two skirmishes. In the afternoon, as it moved south to reinforce another of the division's brigades, it was badly shot up in encounters with Egyptian tanks

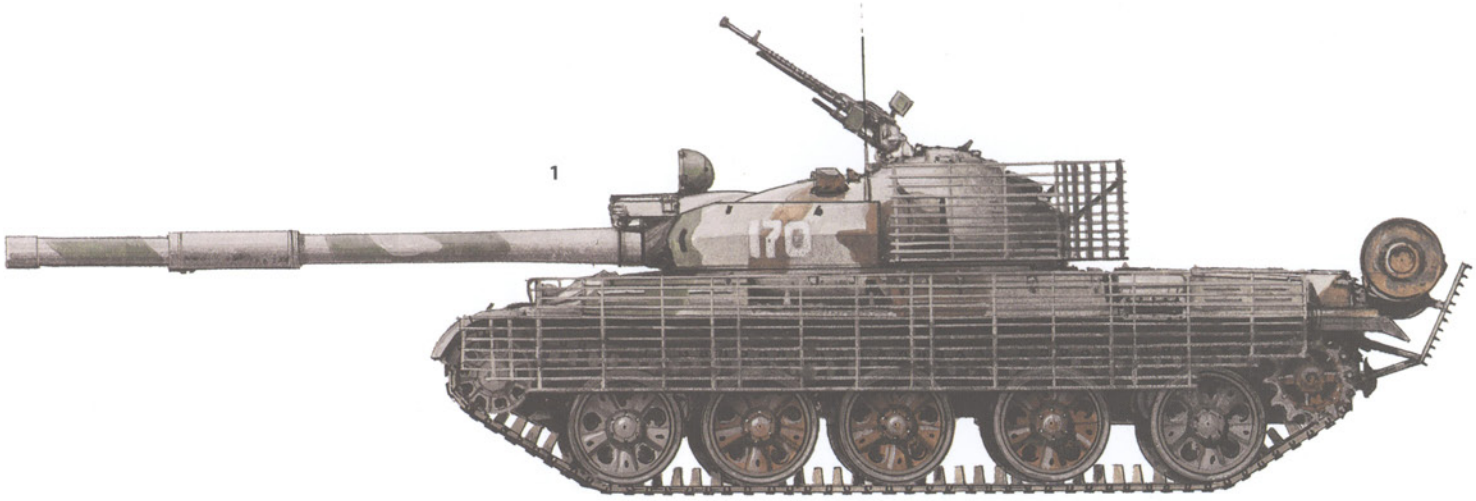
E

1: T-62M, 42ND GUARDS MOTOR RIFLE DIVISION, KHANKAL, CHECHNYA, 2005

After losing numerous expensive T-72 and T-80 tanks in the early phases of the war in Chechnya, the Russian Army reverted back to the Afghan pattern of employing the older but durable T-62. This example show the full-up protective suite of the T-62M with brow armor, but with an added appliqué package of NII Stali *reshetka* slat armor to protect the sides and rear from RPG anti-tank rockets. Pattern-painted camouflage in Chechnya is largely up to the local commanders, and this scheme consists of light gray and brown over the usual camouflage green.

2: T-62 MODEL 1962, GEORGIAN ARMORED BATTALION, GEORGIA, SUMMER, 2008

This T-62 Model 1962 has been upgraded with NII-Stali *reshetka* slat armor for better anti-RPG protection, but lacks the full T-62M upgrade package. The color scheme is the late Soviet-era scheme of gray sand and black over the usual camouflage green. The Georgian tanks followed the Soviet practice of a three-digit tactical number.


1
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2
215

The lucky crew of a T-62 Model 1967 of the Egyptian 25th Armored Brigade crosses to the west bank of the Suez Canal on February 14, 1974, following a UN-brokered disengagement agreement. This is one of a handful of tanks of the brigade to have survived a violent ambush by the Israeli 217th Armored Brigade on October 17, 1973, during the fighting around the Deversoir Suez crossing point. (United Nations)

and infantry anti-tank missile teams including the Egyptian 24th Armored Brigade with T-54A/T-55 tanks. One Israeli battalion lost 16 of its 25 tanks. Although the situation stabilized around dusk, Adan's division had been reduced in strength from about 170 to 100 tanks by the day's fighting.

The Egyptian Army's other T-62 brigade further south did not see much fighting until October 17 when it became embroiled in the final stages of the largest tank battle of the war. The "Chinese Farm" was an experimental agricultural station near the junction of the Egyptian Second and Third Armies at the northern end of the Great Bitter Lake. It became the scene of intense fighting because it was near the point where General Ariel Sharon's 143rd Armored Division was attempting to push over to the west bank of the Suez Canal. In the meantime, Adan's 162nd Armored Division had fought its way south along the canal and joined in swirling tank battles around the crossroads near the Chinese Farm. On the afternoon of October 16, the Egyptian Second Army launched a major counterattack by two tank brigades that lasted into the early morning hours of October 17; the Egyptians lost about 160 T-54A/T-55 tanks and the Israelis about 80 tanks. As this engagement was petering out, the neighboring Egyptian Third Army committed the fresh 25th Armored Brigade with 96 T-62s. The approaching Egyptian tank column was spotted in advance by the Israelis, and elements of the 217th Armored Brigade were assigned to lay an ambush. The 25th Armored Brigade advanced northward with the Great Bitter Lake on their western flank. Centurion Shot tanks suddenly emerged over the sand dunes of their eastern flank, initiating a violent engagement around 1445 hours. The Egyptian tank battalions were caught by surprise due to a lack of flank security and began taking heavy losses. The Egyptian column was hemmed

A T-62 Model 1967 of the Egyptian 25th Armored Brigade moves past a UN buffer zone in February 1974 during efforts to extract the Third Army from the east bank of the Great Bitter Lake as part of the ceasefire agreement ending the 1973 war. (United Nations)

in by a large Israeli minefield that had been laid in 1970 during the "War of Attrition." Although the T-62 companies tried to rally and attack the advancing Israeli wave, they were unprepared for the ferocity of the attack and the brigade was decimated. In his account of the battle, Lieutenant-General Saad el Shazly later wrote: "When our tanks rolled north into the killing ground, they were attacked from three sides and trapped against the lake on the fourth. Our crews fought desperately against the odds. But when night came there were only a few survivors to pull back to the Third Army bridgehead. It was an utter waste." About 50 to 60 T-62 tanks were destroyed in the attack by the 217th Armored Brigade, and others were lost in neighboring skirmishes. By day's end, only 10 of 25th Armored Brigade's original 96 T-62 tanks survived; Israeli losses were only four tanks.

The main opponent of the T-62 in the Sinai theater was the Centurion Shot, a heavily modified version of the British Centurion tank. The Israelis had completely re-built these since the 1967 war, replacing the engine and powertrain with the more reliable components from the US M60 tank, and re-arming it with the L7 105mm gun. The Centurion Shot and T-62 were fairly evenly matched in terms of firepower and mobility, with the T-62 having an advantage in armor protection. The outcome of the fighting in 1973 was much more dependent on tactical circumstances and crew capabilities than technical features.

The Syrian Army deployed five T-62 brigades during the fighting on the Golan Heights in October 1973. This T-62 Model 1967 ran over a land mine as can be seen from its damaged road-wheel, and is being recovered by the Israeli Army after the fighting. (US DoD)

The Golan Maelstrom

The Syrian Army possessed a substantially larger T-62 force than the Egyptians, with five armored brigades numbering about 95 tanks each. In contrast to the Egyptian Army, where the T-62 brigades served in mechanized infantry divisions, the Syrian T-62 brigades were concentrated in two of the armored divisions. The 1st Armored Division had two T-62 brigades, the 47th and 91st Armored Brigades, while the 3rd Armored Division had the 20th and 65th Armored Brigades. The independent 70th Republican Guard Armored Brigade was also equipped with the T-62.

On the southern sector, the Syrian Army followed Soviet doctrine, leading its attack with the 5th and 9th Infantry Divisions and saving the 1st Armored Division for the exploitation phase. After having pushed its way through the thin Israeli defenses, the 1st Armored Division was committed on the morning of October 7 to seize key Jordan river bridges. The 47th Armored Brigade ran into an emplaced company of an Israeli Centurion Shot unit while approaching the Arik river bridge, and promptly lost 35 T-62 tanks while the Israelis lost only three. The 91st Armored Brigade overran some infantry and a battery of Israeli self-propelled guns, but encountered no tanks before establishing a laager after dark when only 5km from the Bnat Yaacov bridge.

In the northern sector, the violent attack by the Syrian 7th Infantry Division overwhelmed the 188th "Barak" Armored Brigade and by the end of the day only six of its 105 Centurion Shot tanks remained. Nevertheless, the Israeli line held and the sector reserve, the 7th Armored Brigade with 72 Centurion Shot, moved forward. Although substantially outnumbered and outgunned, the Israelis had the advantage of fighting from well-situated defensive positions. T-62 tanks were finally committed in this sector during the attacks on October 9 when reinforcements were brought in to bolster the flagging 7th Infantry Division attack in the "Valley of Tears." There is some dispute whether these T-62s belonged to the 70th Republican Guard Brigade or the 3rd Armored Division. Regardless, the T-62 tanks fared no better than the other Syrian units and were badly battered by Israeli tank fire in the day's fighting. The 7th Armored Brigade, whittled down to seven tanks, still held the high ground over the Valley of Tears while below them were the smoldering wrecks of nearly 500 Syrian armored vehicles, a jumble of T-55

and T-62 tanks as well as BMP-1 infantry fighting vehicles. It was the most remarkable defensive action in the war

While the Syrians were being fought to a standstill in the Valley of Tears, the IDF counter attacked against the main threat in the southern sector. General Moshe "Musa" Peled's 146th Armored Division was equipped mainly with old M51 tanks, an upgraded version of the World War II Sherman tank with French 105mm smooth-bore guns. The Israeli tanks directed their attention against the Syrian corps reserve, the 47th Armored Brigade, and overran it with modest losses. The disintegration of this unit led to the rout of the Syrian 5th Infantry Division in this sector and, over the course of the next day, a general rout of the Syrian Army along the whole front. By October 11, the IDF was able to field three armored divisions on the Golan front and began a counter offensive into Syria itself. The Syrian 3rd Armored Division's two T-62 brigades were sent to occupy the Sasa defensive line to the south of Damascus. Retreating Syrian forces accumulated behind these defenses and finally began to congeal. The surprise appearance of the Iraqi 3rd Armored Division on October 12 diverted Israeli attention, and the fighting along the Sasa line bogged down into a stalemate until the ceasefire of October 23.

The Israelis who fought on the Golan front felt that the T-62 tank held a decided technological edge over its most frequent opponent, the Centurion Shot. The T-62 had better frontal armor and its novel ammunition offered it better firepower, at least on paper. Yet the critical factor was the superior Israeli training, most noticeable in tank gunnery. Israeli tanks regularly engaged Syrian tanks at ranges of 1,500m or more, while the Syrians were seldom effective at ranges over 1,000m. The combination of well-planned defensive positions as well as better training led to massive disparities in tank losses. Syrian and Egyptian tank losses were so severe that the Soviet Union had to rush massive shipments of tanks in the days before the ceasefire.

Even though the T-62 had often been overwhelmed by the older Israeli tanks, the 1973 fighting was its moment of glory. Its powerful new armament

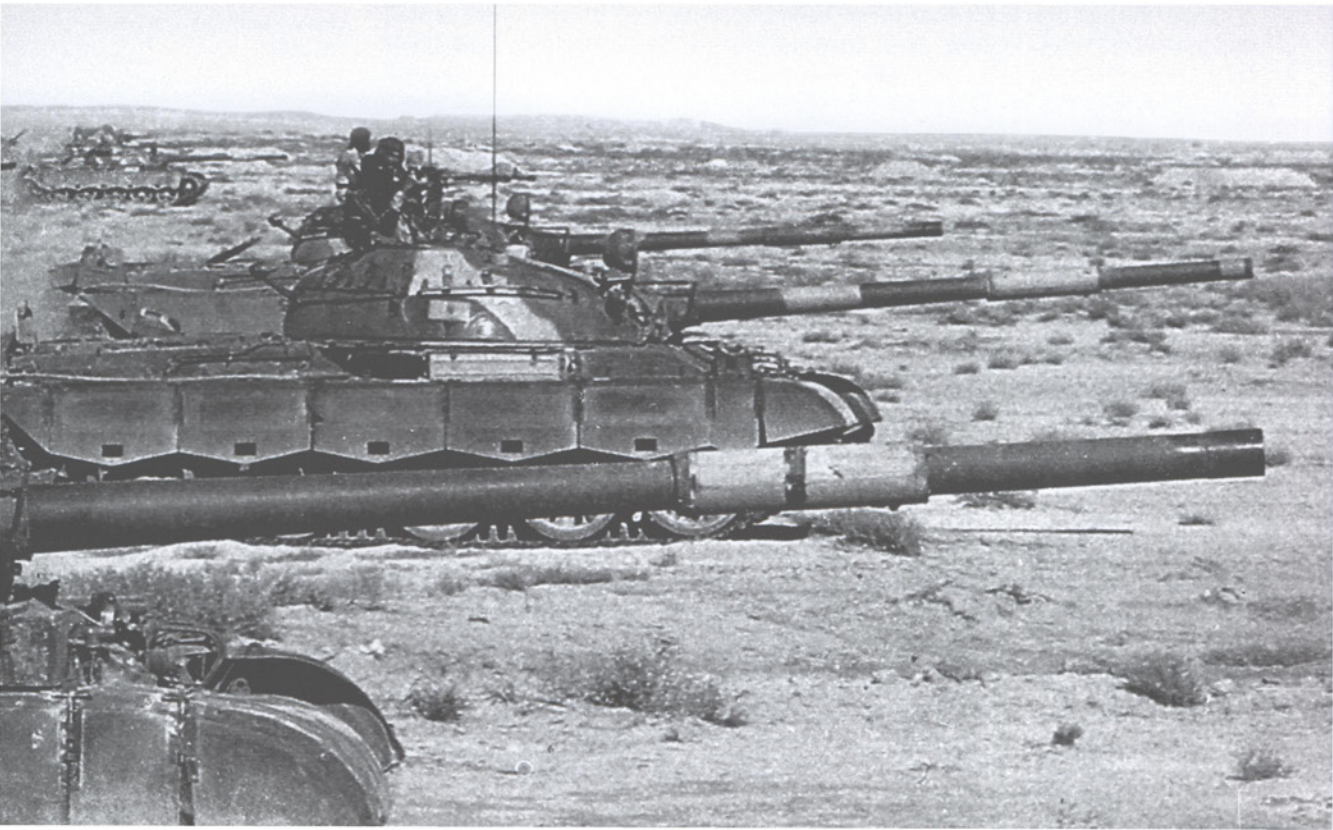
The excellent performance of the T-62 during the Golan fighting provoked considerable interest in its novel firepower features within the US Army. A number of T-62 Model 1972 tanks were transferred to the US from Israel for technical evaluation, like this example at Aberdeen Proving Ground, still in its original Syrian colors. (US DoD)

with its novel APFSDS ammunition substantially changed thinking about tank-vs-tank fighting, accelerating the trend away from HEAT to APFSDS for tank-vs-tank fighting in both NATO and the Warsaw Pact. At the same time, the lessons of the Israeli tankers on the Golan reverberated through NATO, with many parallels seen in the NATO–Warsaw Pact confrontation in central Europe. The fighting emphasized the primacy of tank crew training in tank-vs-tank fighting and helped serve as a catalyst for reform and rejuvenation in the hopes that smaller numbers of better-trained NATO tank crews would offset the Warsaw Pact's numerical superiority.

Third World Warrior

As a result of the widespread export of the T-62 in the 1970s, the type saw extensive combat use in the final years of the Cold War. Much of this combat use took place in civil wars largely out of view of much of the world, including internecine struggles in Ethiopia, Yemen, and Somalia. The T-62 also saw some limited service in the Angolan civil war in both Angolan and Cuban hands, and with Libyan forces in Chad in September 1986.

The most extensive employment of T-62 tanks after the 1973 Middle East war was the conflict between Iran and Iraq in 1980–88. Iraq had acquired one of the world's largest T-62 inventories in the 1970s, and this type made up much of its tank force during the conflict. Its Iranian armored opponents were an intriguing blend of types including the M47M and M60A1 from the US, the Chieftain from Britain, and several other types added later, including Chinese Type 59s. The early fighting saw some significant tank-vs-tank fighting against the Iranian 92nd Armored Division with Chieftain tanks in the Khuzestan region where Iraq launched its ground offensive. Iraqi tank deployment, including the operations by the T-62-equipped 3rd Armored Division, was not especially effective, and the limited skills of the



The Iran–Iraq war of 1980–88 saw extensive use of the T-62 by the Iraqi Army. The Iraqis eventually adopted a number of local features such as the Chinese-pattern sand shields, seen on this T-62 Model 1972 with the 4th Corps in the Basra sector in the winter of 1981–82.

Iraqi tank crews adversely affected the combat performance of the tank force. During the fighting in January 1981, the Iraqis claimed to have destroyed 214 Iranian tanks, but the Iranians admitted to only 88. The Iranian forces were far more successful in employing their smaller armored force in a succession of engagements in 1981–82 that largely pushed Iraq out of Khuzestan, inflicting about 600–700 tank casualties on the Iraqis. In spite of the significant number of tanks on both sides, large-scale tank-vs-tank battles became increasingly less common after the first years of the war. As the Iraqi war effort took on a decidedly defensive character, T-62 tactics frequently revolved around their use from fixed defensive positions to take maximum advantage of their firepower and protection and to skirt around the shortcomings of their crew performance.

The T-62 again saw combat in Syrian hands in 1982 in the short and violent war in Lebanon. Syria deployed the 62nd Armored Brigade in the Bekaa valley and the 85th Mechanized Brigade along the Damascus–Bierut highway, and once the Israeli attack began, the 1st and 3rd Armored Divisions were deployed into the Bekaa valley. The 1st Armored Division was equipped primarily with the T-62 while the 3rd Armored Division was partly equipped with the newer T-72M tank. In the event, the T-62 fared poorly against the new Israeli Merkava tank, and the 1st Armored Division was routed in the early June 1982 fighting, though not destroyed as thoroughly as in the in 1973 war owing to the very different circumstances of the conflict. By this stage, the T-62 had no technological advantages over the Israeli tanks, as the new Merkava offered better armor protection, and the Israelis had adopted APFSDS ammunition for their 105mm guns based on the 1973 experience with the T-62. Syrian losses in the conflict were in the order of 300 T-55 and T-62 tanks, a significant loss but not on the same scale as the devastation of 1973.

The Afghan Quagmire

The T-62 also saw its first extensive use in Soviet hands during the savage conflict in Afghanistan in 1979–88. The Afghan Army had been partly equipped with T-62 tanks in the early 1970s prior to the eruption of the civil war. The Communist coups in Afghanistan in 1978–79 and the continued disintegration of government control prompted a Soviet intervention that began

The Democratic Republic of Afghanistan Army (DRA) received T-62 tanks in the mid-1970s as part of a Soviet aid program. This T-62 Model 1972 is seen on parade in Kabul prior to the Soviet intervention. (US DoD)

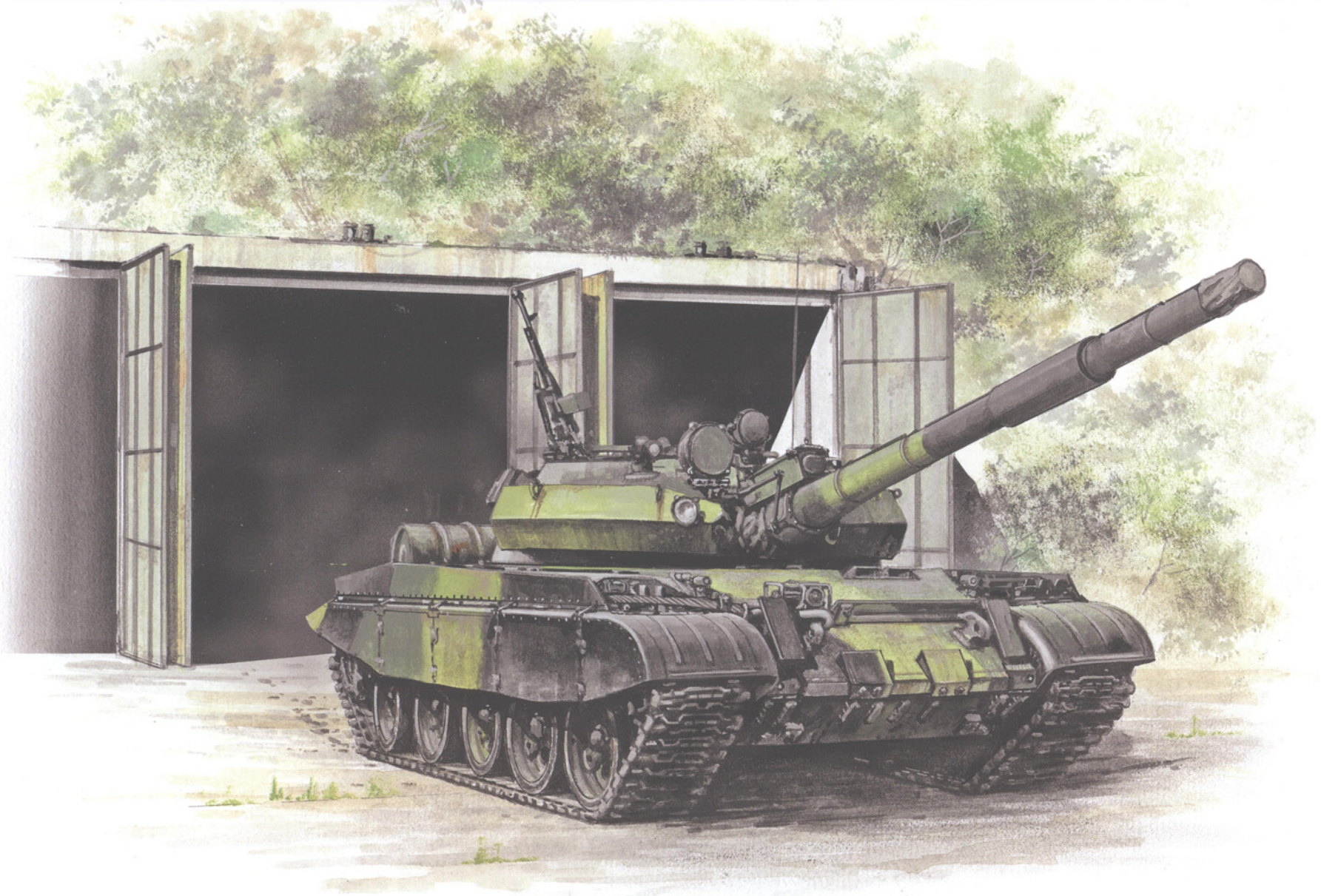
Many DRA units defected before and after the Soviet intervention in 1979 and the units had to be rebuilt. One of the tank regiments in Kabul was reconstructed using new equipment supplied by Moscow to patrol the key ring road near the capital. This is a T-62 Model 1967 rebuilt with the sand skits and fitted with the newer RMSh tracks. (W. Luczak)

on December 24, 1979. The main Soviet Ground Force element sent into Afghanistan was the Fortieth Army, and since it was located in areas far removed from the main confrontation zones facing NATO, its equipment was older. The predominant tank type was the T-62, since there was little point in deploying more modern types such as the T-64 or T-72 when the opposition was a guerrilla force without tanks. Some Soviet T-62 tanks were dug in and used to form the core of firebases; others were employed for patrols and convoy protection, and others were used for infantry support during the Soviet attacks on mujahedeen positions. RPG-7 anti-tank rockets and mines were the main threats to the T-62. The T-62M upgrade program was partly a response to these threats, with the anti-mine package being largely motivated by the Afghan experience. In Afghanistan, the uparmored T-62M1 was locally called T-62D (*dopolitelnoy zashchita*: extra protection). By 1987, the Soviet tank force in Afghanistan included 625 T-62 tanks. Total tank combat losses in Afghanistan from 1980 to 1989 was around 385, almost all T-62s. However, 1,340 T-62 tanks were written off by Soviet units in Afghanistan, which includes combat losses, worn-out tanks, and tanks not worth recovering.

F

T-62M, RESERVO DEL ALTO MANDO, EJERCITO REVOLUCIONARIO, MANAGUA, CUBA, 2000

The Cuban Army began receiving the T-62 from the Soviet Union in 1976 and eventually acquired about 400. A small number of these were the T-62M with the full appliqué armor package, received in 1989–90 when they were transferred from a Soviet brigade. As a result, the T-62M was the most modern tank in the Cuban arsenal. Most were assigned to the RAM (High Command Reserve), a special formation roughly the strength of an armored division, which was stationed in Managua in the Havana area as the praetorian guard of the Castro junta. Owing to funding shortages, a large portion of the Cuban arsenal is kept in depot, sometimes in protected underground hangers, as seen here with this T-62M departing for periodic training. This shows an example in its tropical camouflage colors of yellow, green, and black over the usual Soviet camouflage green.



Soviet AFV Combat Losses in Afghanistan											
	1980	**1981**	**1982**	**1983**	**1984**	**1985**	**1986**	**1987**	**1988**	**1989**	**Total**
T-62 tank	60	100	40	30	35	30	40	20	25	5	385
BMP and BMD	115	140	105	95	145	130	130	95	90	10	1,055
BTR and BRDM	140	170	140	150	185	220	190	140	125	15	1,475

ABOVE
When first deployed in Afghanistan in 1979–80, many Soviet T-62 tanks had been rebuilt with side skirts. This example also has spare track attached to the turret side, possibly for additional protection, though it would do little good in defending against the ubiquitous RPG-7 anti-tank rocket grenade.

RIGHT
The T-62M rebuilding program was heavily influenced by the Afghan experience. This T-62M1 is seen here in a static defensive position. The crew is sitting on the brow armor, but the distinctive Tucha smoke mortar array is very evident in this view.

A T-62M1 is entrenched in a hill-top fire base in Afghanistan with the area littered with spent ammunition casings.

Even after the Soviet withdrawal in 1988, enough T-62 tanks remained in Afghanistan that it became the predominant tank type in the intractable fighting there through the 1990s. When the US Army helped re-establish the Afghan tank force in 2003, 44 refurbished T-62 tanks became the backbone of the force.

At the time of the collapse of the Soviet Union in 1991, T-62 strength had fallen considerably from a peak of 14,000 tanks during the Cold War. Besides diversions due to exports, many tanks were mothballed into reserves and slated for scrapping under the Conventional Forces in Europe program. The 1991 inventory was 2,021 tanks in Russia and 948 more examples in the former Soviet republics such as Ukraine, Belarus, and Moldova. In spite of their small numbers, the T-62s were located in the most troubled regions of the Soviet republics, especially the Caucasus. The T-62 saw use in the violent fighting in Chechnya, both in Russian Army service as well as in the hands of the tank units of the Ministry of the Interior (*Vnutrennikh Voisk*: Interior Force).

A Canadian UN observer poses with the crew of a Soviet T-62M1 while monitoring the withdrawal of Soviet forces in 1988. This vehicle is fitted with the *reshetka* slat armor on the hull sides and turret for anti-RPG protection, a feature not always seen on the tanks in Afghanistan. (Barry Beldam collection)

When the Afghan National Army was rebuilt in 2003, the 1st Afghan Armored Battalion in the Kabul area was re-formed using the familiar T-62 tank. Its technical advisors were mainly ex-East German tankers and Romanian maintenance crews familiar with Soviet-era tanks. The two nearest tanks are T-62M1s with brow armor, while some of those further down the row lack the armor appliqué. (US DoD)

During the war with Georgia in 2008, T-62 tanks were used by tank units of the Russian Army, Russian Interior Ministry, Abkhazian militia, and the Georgian Army. While the T-62 may no longer be state of the art for tank-vs-tank fighting, it is a viable close-combat weapon in many regions of the world.

Desert Storm

By the time of the 1991 Gulf War, the T-62 had been supplanted by the new T-72M as the premier Iraqi tank, which was the mainstay of the Republican Guard tank brigades. Iraq lost more than 500 T-62 tanks during the war with Iran, but, as importantly, many were worn out from intensive use and inadequate maintenance. By 1991, recently purchased T-55 and Chinese Type 69 tanks were the most common types in Iraqi service. The T-62 was still in

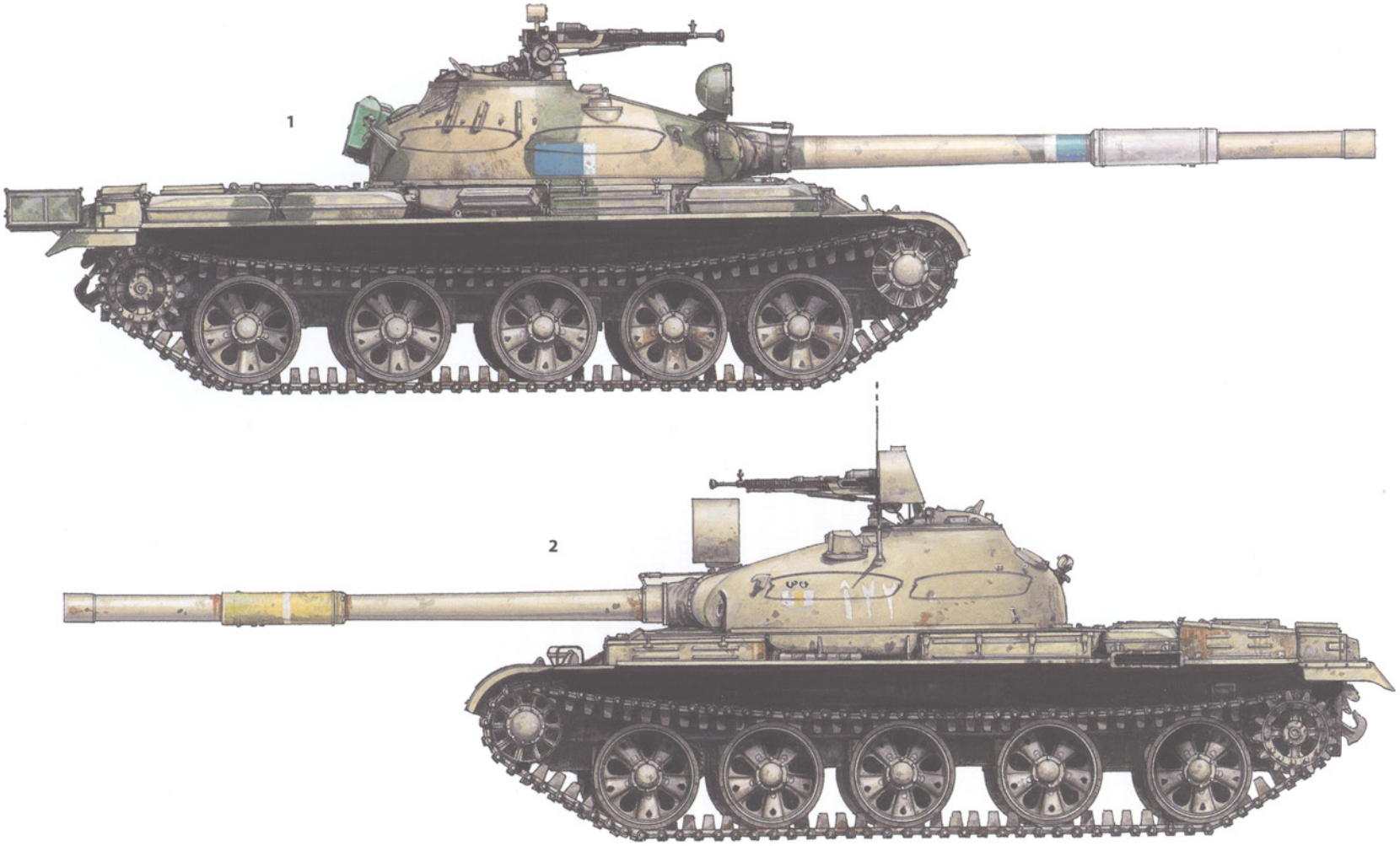
G

1: T-62 MODEL 1972, IRAQI 4TH CORPS, BASRA SECTOR, WINTER 1981–82

Iraqi tanks taking part in the war against Iran in 1980–88 usually had desert camouflage colors added to the usual Soviet camouflage green. There does not appear to have been any standardization in color or patterns, with units painting their tanks with the usual sorts of rolling bands of sand color over the Soviet camouflage green color as seen here. Iraqi divisions typically used circular or rectangular colored geometric insignia as is seen with the blue rectangle and white band on this tank; the precise meaning of these markings has not been identified to date. These markings were repeated on the gun barrel, along with a painted fume extractor for sub-unit identification.

2: T-62 MODEL 1972, 3/6TH ARMORED BRIGADE, 3RD SALADIN ARMORED DIVISION, OPERATION *DESERT STORM*, FEBRUARY 1991

Iraqi tanks in 1991 were typically painted in overall pale sand color. The Iraqi Army used a complicated pattern of tactical insignia. The divisional insignia was the painted bore evacuator, yellow with a white stripe. The 12th Brigade of the 3rd Saladin Armored Division used a gray disc with three square pips. The outer pips identified the three brigades in white, green, and black, with white identifying the 6th Brigade as seen here. The center pip identified the sub-unit within the brigade: gray, the HQ company, white the 1st Regiment, black the 2nd Regiment, yellow the 3rd regiment, and green the mechanized regiment; the pattern is reversed on the fume extractor. The Arabic writing above the pips are the letters "QX" signifying "Qadisyah Saddam", referring to the Muslim victory in 637AD. Some units used a two- or three-digit tactical number as seen here, 22A, indicating the tank of the platoon sergeant, 2nd platoon, 2nd company.


1
2

The poor quality of Iraqi tank crew training led to tactics to minimize the vulnerability of their tanks. During the 1991 Gulf War, many tanks like this T-62 Model 1972 of the 3rd Saladin Armored Division near Ali-al-Salem airbase were dug in as static defense points. A carpet of floor tiles or concrete slabs were positioned under the gun barrel to reduce the amount of dust kicked up when firing. (US DoD)

use by some of the better regular army units, for example equipping the 12th Armored Brigade of the 3rd Saladin Armored Division in Kuwait and the 46th Armored Brigade of the 12th Numan Armored Division. It was also a frequent Iraqi practice to use T-62s as the regimental and battalion command tanks in armored brigades otherwise equipped with T-55/Type 69 tanks. Iraqi T-62 tanks had a number of modifications based on the 1980–88 experiences. The infrared searchlights were frequently protected with armored covers and Chinese-pattern saw-tooth sandshields were also common.

The Iraqi T-62 tanks saw their most extensive use in the Kuwait sector during the February 1991 fighting, with the 3rd Saladin Armored Division facing the US Marine Corps. Although most of the US Marine tank units still operated older M60A1 tanks, the better training of the Marine tankers and the use of modern 105mm APFSDS ammunition put the Iraqi tanks at a distinct disadvantage. Most of the fighting took place at close ranges of under 1,000m owing to the weather conditions and smoke from burning oil fields. The Marine 1st and 3rd Tank Battalions with M60A1 tanks claimed

Iraqi T-62 tanks in the 1991 war had many small innovations derived from the 1980–88 war with Iran. The Luna infrared searchlight and the commander's searchlight had thin armored covers added to protect them from artillery fragments, an innovation patterned on Chinese tanks acquired during the final years of the war with Iran. This is an example from the Iraqi 3rd Saladin Armored Division that was captured by the US Marine Corps and brought back for exhibit at the base at Quantico, Virginia, in 1991. (Author)

116 Iraqi tanks destroyed, many of them T-62s, while the M1A1 tanks of the 4th Tank Battalion claimed a further 59 Iraqi tanks including about 30 T-72s from the 3rd Saladin Armored Division. Not a single US Marine M60A1 tank was penetrated by Iraqi tank fire during the war and it is not clear if any were even hit.

FURTHER READING

In spite of its importance in Soviet tank history, the T-62 has not attracted as much attention as most post war Soviet tanks. The best account is the official Nizhni-Tagil history by Ustyantsev and Kolmakov, though it is better on the broad political and technical trends than on details of the tank's evolution. Karpenko's superb little encyclopedia remains the best account on variants. Kartsev's autobiography helps provide a taste of the political intrigue and machinations behind the scenes in the Soviet tank industry.

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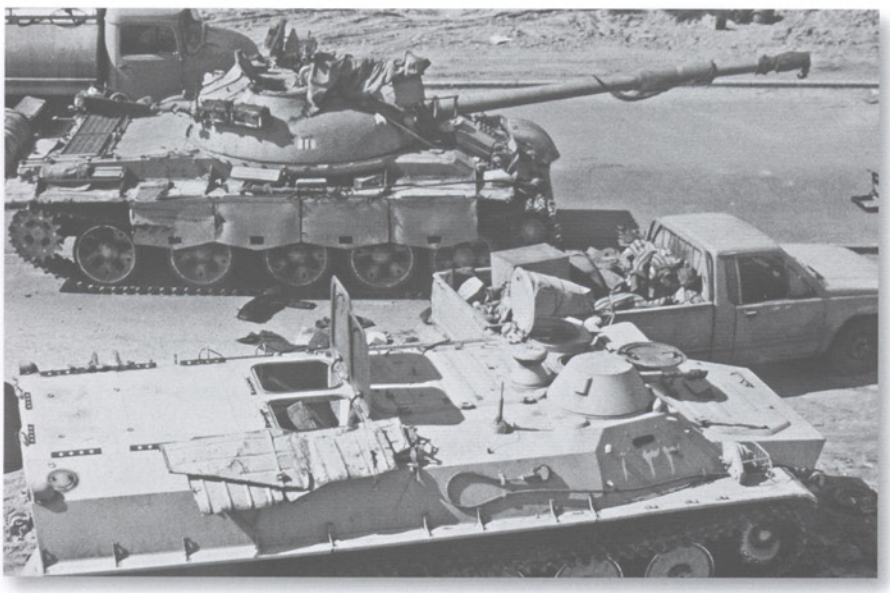

Another Chinese influence on Iraqi tanks was the saw-tooth sand shields, as seen here on an Iraqi T-62 Model 1972 of the 3rd Saladin Armored Division abandoned during the retreat from Kuwait in the February 1991 fighting, with an MT-LB armored transporter in the foreground. (US Marine Corps)

INDEX

Figures in **bold** refer to illustrations.

1K13 sight/fire-control system 27
2ET-1 protective screen 22
2K4 *Drakon* missile system 8, 10, 19, **20**
3D6 smoke grenades 26
3UBK23-2 115mm ammo 27
5TDFM 850hp diesel tank powerpack **30**
9K116-2 missile system 27
9M14/9M14M *Malyutka* (AT-3 Sagger) antitank missile **19**, 20, 22
9M117 missile 27

Afghanistan (Soviet involvement 1979–88) 4, 26–27, 31, 39, 40, 42
AMX-30 tank 6
APC ammunition 5–6
APDS ammunition 5, **6**, 11, 15–16
APFSDS ammunition 11, 14, 16, 22, **25**, 26, 32, 38–39, 46
Arab–Israeli war (1973) 4, 22, 32, 33, 35–38

Bastion 100mm tank gun **30**
BDD appliqué armor 23
BDRM-1/-2 armored personnel carrier 19, 42
BM2 penetrator 11
BMD armored personnel carrier 42
BMP-1 infantry fighting vehicle **11**, 37, 42
BT series tanks **17**
BTR armored personnel carrier 42
BV-62 ballistic computer 26

Centurion Shot tank 32, 34–37
chemical-biological-radiological (CBR) defensive system 13
Chieftain tank 5, 16–18, 38
Chelyabinsk 700hp diesel tank engine 17
Chonma tank (North Korea) 30
Chuikov, Marshal V I 14–15
Czechoslovakia, Soviet invasion of (Operation *Danube*) **8**, 17

D-10 100mm rifled tank gun 4, 6
D-54 100mm smoothbore tank gun 6, 7, **10**, 12, 14–16
D-68 115mm tank gun 16, **27**
D-81 125mm smoothbore tank gun 16, 18, 22, **30**
D-83 125mm rifled tank gun 16, 18, 22
Drozd active protection system 30
DShKM 12.7mm anti-aircraft machine gun 20, **25**, **26**

Gulf war (Operation *Desert Storm*, 1991) 4, **44**, **46–47**

HEAT ammunition 5, **6**, 11, 22, **25**, 26, 32, 38
HE-Frag ammunition **14**, 16, 22, **25**
Iran–Iraq war (1980–88) 4, **38**, 38, 39
IT-1 tank destroyer **18**, 19, **20**

Kartsev, Leonid 12
Khrushchev, Nikita 8, 10–12, 14, 18–19
KMT-4 mine rakes **23**
KTD-1 laser rangefinder 22, 26, **27**, **28**
Kuleshov, Marshal P N 18

L7 105mm tank gun (on M60) 14, 35
Lebanon war (1982) **28**, 39
Leonov, Col D 32
LRA5 missile 16

M1A1 tank 47
M47M tank 38
M48/M48A Patton tank 7, 14, 25
M51 tank 37
M60/M60A1 tank 5, 14, 35, 38, 47
Merkava tank (Israeli) 39
Meteor gun stabilization system 27
Morozov, A A 7
MT-2B armored transporter **47**

Obiekt 140 7, 8, 12–13
Obiekt 140/165 13
Obiekt 150 missile tank (IT-1) 8, 10, 12, **18**
Obiekt 139 12
Obiekt 165 **10**, 12–13, **13**, 14–15
Obiekt 166 *Yubileniy* tank destroyer/166M/166 sb. 4 13–15, 17, 20
Obiekt 167/167M/167T 17, **17**, 18, **19**
Obiekt 177 17
Obiekt 430 7, 12, 14–16
Obiekt 432 15, 16
Obiekt 434 16, 18
Okunev, Ivan V 7
OPVT deep-wading equipment 20, **21**

Peled, Gen Moshe "Musa" 37
Petrov, Gen F F 6, 12
PKT 7.62mm machine gun **25**
Poluboyarov, Marshal Pavel P 14

R-122 radio 20, **25**
Raspletin, A A 8
reactive armor **30**
Reshetka slat armor **32**, **43**
RMSh track 20, **27**, **28**, **40**
RPG-2/RPG-7 rocket-propelled grenade 26, 32, **32**, 40, **42**, **43**

S-75 (SA-2 Guideline) missile 8
S-300P (SA-10 Grumble) missile 8
Sharon, Gen Ariel 34
Sheksna 115 guided tank missile system 27, **30**
stadiametric rangefinder 20
'Stillbrow' armor (on Chieftain tank) 26

T-10 heavy tank 18
T-12 *Rapira* 100mm smoothbore towed antitank gun 11–13
T-34 tank 7
T-44 tank 7
T-54 tank 7, **11**, 13, 30
T-54A tank 7, 12, 14, 22, 32, 34
T-55 tank 7, 8, 11, **12**, 13–14, **14**, 15–17, 20, 22, 30, 32, 34, 36, 39, 44, 46
T-55A tank 15
T-55K command tank 20
T-62 tank **7**, **11–14**, **15**, **16**, 17–18, 20, **20**, **23**, 34–40, **42**, 43, **44**, **46**, 47
T-62A tank **10**, 16, 18, 20
T-62AG tank **30**
T-62B tank **17**, 18
T-62D tank 30, 40
T-62D1 tank 30
T-62K command tank 15, 20
T-62 Model 1962 tank **8**, 15, **27**, **32**, **37**
T-62 Model 1967 tank **22**, **23**, **33**, **35**, **36**, **40**
T-62 Model 1972 tank 20, **21**, **23**, **24–25**, **26**, **28**, **31**, **38**, **39**, **44**, **46**
T-62M tank 23, 27, **30**, **32**, 40, **40**, **42**, **44**
T-62M1 tank 27, 40, **42**, **43**
T-62MV tank 30
T-62MV1 tank 30
T-64 tank **13**, 15, 16, 40
T-64A tank 4, 16, 23, 30
T-72 *Ural* tank 4, **13**, 17–18, **32**, 40, 47
T-72A tank 23
T-72M tank 39
T-80 tank **32**
TNA-2 radio system 20
TPN-1-41-11 daylight periscopic sight **16**, **25**, 27
TShS-41U telescopic sight **16**, **25**, 27
Tucha Type 902B smoke dispenser system 26, **42**
Type 59 tank (Chinese-built) 38
Type 69 tank (Chinese-built) 44, 46

U-5/U-5T/U-5TS (2A20) *Molot* 115mm smoothbore tank gun **7**, **10**, 13–16, **25**

Volna fire-control upgrade 26
V-36F tank engine 17
V-46-5M tank engine 30
V-55V tank engine **20**, **25**

Zhelud 115mm autoloader project 18

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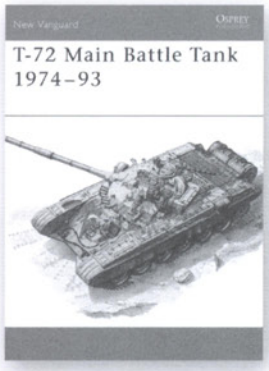

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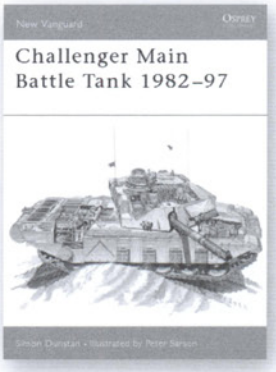

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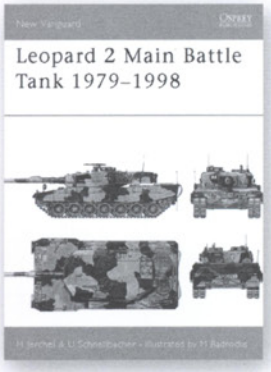

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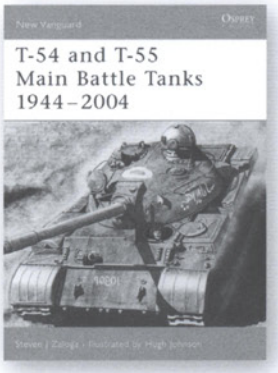

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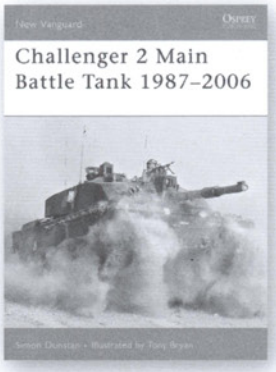

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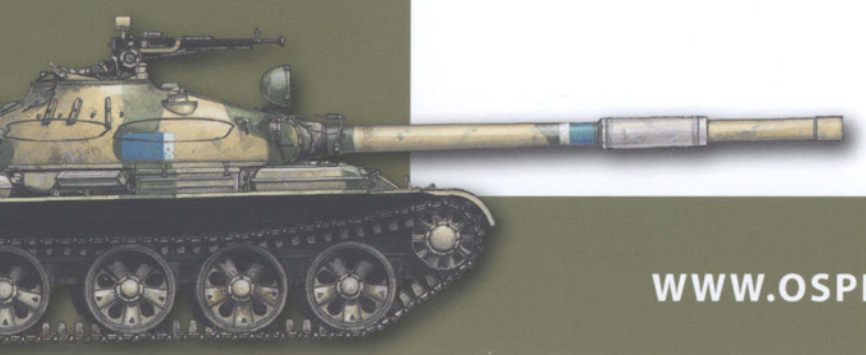

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